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TECHNICAL MEMORANDUM

X-522

HEAT-TRANSFER AND PRESSURE MEASUREMENTS OF A 1/7-SCALE MODEL OF A MERCURY CAPSULE AT ANGLES OF ATTACK FROM 0° TO $\pm 20^{\circ}$ AT MACH NUMBERS OF 3.50 AND 4.44

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

TECHNICAL MEMORANDUM X-522

HEAT-TRANSFER AND PRESSURE MEASUREMENTS OF A 1/7-SCALE MODEL OF A MERCURY CAPSULE AT ANGLES OF ATTACK FROM 0° TO ±20° AT MACH NUMBERS OF 3.50 AND 4.44*

By Nancy L. Taylor, Ward F. Hodge, and Paige B. Burbank

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SUMMARY

Heat-transfer and pressure coefficients were obtained on the reentry, exit, and escape configurations of a 1/7-scale model of a Mercury capsule. The model was tested through an angle-of-attack (α) range of 0° to ±20° at Mach numbers (M) of 3.50 and 4.44 and a Reynolds number range, based on maximum diameter, of 2.0×10^6 to 4.0×10^6.

In the reentry configuration the Stanton numbers on the hemispherical heat shield could be predicted by Lees' theory by using measured pressures. At $\alpha = 0^\circ$ the separated flow from the shoulder of the hemispherical heat shield reattaches on the parachute canister and the resultant Stanton numbers are approximately 85 percent of the maximum measured Stanton numbers on the hemispherical heat shield at $M = 3.50$ and approximately 60 percent at $M = 4.44$. On the windward side of the parachute canister at an angle of attack of 15°, the maximum Stanton numbers at $M = 3.50$ are approximately 90 percent of the maximum Stanton numbers on the hemispherical heat shield and approximately 80 percent at $M = 4.44$.

In the exit configuration the measured Stanton numbers on the conical portion of the capsule (for $\alpha = 0^\circ$ and on the leeward side when $\alpha \neq 0^\circ$) agreed with Van Driest's turbulent theory for a flat plate based on local pressures. These Stanton numbers are of the same magnitude as those measured on the hemispherical heat shield of the reentry configuration. At angle of attack the multiple shocks of the front face, of the step between the canisters, and of the reattached flow coalesce on the windward side, and the resultant flow field with multiple vortices limits mathematical definition of the flow.

*Title, Unclassified.

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The tower of the escape configuration creates extreme turbulence over the entire capsule; however, the heating rates are of the same magnitude as for the exit configuration except at 15° angle of attack at $M = 4.44$. At this test condition, the maximum Stanton numbers are approximately 3 times as large as Stanton numbers on the hemispherical heat shield of the reentry configuration.

INTRODUCTION

Project Mercury is a National Aeronautics and Space Administration program for placing a manned earth satellite into orbit and subsequently retrieving it. A Mercury space capsule, evolved from a basic blunted-nose cone shape, was modified to achieve minimum weight without seriously affecting its stability and other aerodynamic characteristics. The prerequisite of minimum weight necessitates definition of the local heat transfer to the capsule shell in all configurations: reentry, exit, and escape. The prediction of heat transfer by theoretical means is limited by the irregular capsule shape and the resultant undefined flow field. Consequently heat-transfer coefficients and corresponding pressure coefficients were experimentally obtained in Langley Unitary Plan wind tunnel for an angle-of-attack range of 0° to $\pm 20^{\circ}$ at Mach numbers of 3.50 and 4.44 and a Reynolds number range, based on maximum diameter, of 2.0×10^{6} to 4.0×10^{6}.

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SYMBOLS

b — wall thickness, in.

C_p — pressure coefficient based on free-stream conditions,

$$C_p = \frac{p_l - p_\infty}{q_\infty}$$

c_p — specific heat of air, Btu/lb-$^{\circ}$R

c_w — specific heat of skin, Btu/lb-$^{\circ}$R (0.100 for Inconel, 0.105 for nickel)

g — acceleration due to gravity, ft/sec^2

h — heat-transfer coefficient, Btu/sq ft-sec-$^{\circ}$R (eq. (2))

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h_c	heat-transfer coefficient considering conduction, Btu/sq ft-sec-°R (eq. (3))
K	thermal conductivity of Inconel, 0.00241 Btu/ft-sec-°R
M	free-stream Mach number
n	time limit of integration, sec
N_{St}	Stanton number based on free-stream conditions, $h/\rho_\infty V_\infty c_p g$
p_l	local static pressure, lb/sq ft abs
p_∞	free-stream static pressure, lb/sq ft abs
q_∞	free-stream dynamic pressure, lb/sq ft abs
r	radial distance, in. (fig. 3)
R	free-stream Reynolds number based on capsule maximum diameter (10.64 in.)
t	time, sec
T_e	equilibrium temperature, °R
T_t	stagnation temperature, °R
T_w	wall temperature, °R
$T_{w,n}$	wall temperature at time greater than zero, °R
$T_{w,0}$	wall temperature at zero time, °R
V_∞	free-stream velocity, ft/sec
W	specific weight for Inconel skin, 530.5 lb/cu ft
w	weight per unit area, $w = Wb/12$, lb/sq ft
x	longitudinal distance, in. (fig. 3)
x_1	surface distance measured in a plane perpendicular to the body central axis, ft

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y_1 surface distance measured in a plane containing the body central axis, ft

α angle of attack, deg

ϕ meridian angle, deg

ρ_∞ density of air based on free-stream conditions, slugs/cu ft

λ Newtonian flow angle (included angle of surface with a plane perpendicular to flow), deg

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APPARATUS AND MODEL

Tests were conducted in the high Mach number test section of the Langley Unitary Plan wind tunnel. This test section has an asymmetrical sliding-block nozzle which permits continuous variation of Mach number from 2.29 to 4.65 and is described in reference 1. The maximum deviation for the Mach numbers over the entire 4-foot by 4-foot test section is ±0.05 for a Mach number of 3.50 and ±0.06 for a Mach number of 4.44. The procedure for conducting heat-transfer tests is described in reference 2.

A 1/7-scale model of a Mercury capsule was constructed with interchangeable components to permit testing of the reentry, exit, and escape configurations. Evaluation of the heat-transfer coefficient from transient wall-temperature measurements necessitates thin-walled construction; therefore, with the exception of the flow diverter and the camera fairings on the parachute canister, the capsule shell was constructed by spinning a 0.030-inch Inconel sheet on a form mandrel. The camera fairings were formed from 0.030-inch Inconel and silver soldered to the capsule shell; the flow diverter was electroplated nickel with a 0.015-inch nominal skin thickness. Internal conduction was minimized by the use of only two internal bulkheads constructed of Transite; the bulkheads were relieved in the vicinity of the thermocouples. Internal convection was minimized by venting the shell interior to free-stream static pressure. Radiation losses were minimized by polishing the model to a 10-microinch-rms finish. A sketch of the model configuration is shown in figure 1 and photographs in figure 2. In the exit-configuration photograph the model has been rotated 90° to illustrate the shape of the flow diverter.

The capsule model was instrumented with both thermocouples and static pressure orifices. The thermocouples were located along 3 meridian lines

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of 0°, 45°, and 90° as illustrated in figure 3, and to prevent interference of pressure instrumentation on thermocouples, the pressure orifices were located in the diametrically opposite quadrant along 3 meridian lines of 180°, 225°, and 270°. The locations of the 55 30-gage iron-constantan thermocouples and the 49 static pressure orifices are shown in figure 3. The wall thickness for each thermocouple is listed in table I. The capsule was symmetrical except for the presence of the flow diverter on the flat face of the exit configuration and the tower in the escape configuration. The model was tested at both positive and negative angles of attack to obtain both windward and leeward heat-transfer and pressure distributions.

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The thermocouple output was recorded on the multichannel sequential analog to digital converter discussed in reference 2. Pressure measurements were made by connecting the orifices to valves which sample 48 pressures in sequence on a single transducer. The transducer output is recorded on digitized self-balancing potentiometers for machine calculations. The free-stream and stagnation pressures were measured on precision manometers.

TEST CONDITIONS

Heat-transfer coefficients and pressure coefficients were determined for a natural boundary-layer transition for the following test conditions:

Configuration	α, deg	M = 3.50		M = 4.44	
		Stagnation pressure, lb/sq in. abs	Reynolds number, R	Stagnation pressure, lb/sq in. abs	Reynolds number, R
Reentry	0, ±5, ±10, ±15	36	2.5×10^6	57	2.7×10^6
Exit	0, ±5, ±10, ±15, ±20	57	4.0	40	2.0
Escape	0, ±5, ±10, ±15	57	4.0	40	2.0

Schlieren photographs and shadowgraphs were taken at several of the test conditions.

A comparison of a typical Mercury capsule trajectory and the tunnel test conditions is shown in figure 4 for the reentry and exit configurations.

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ACCURACY

The accuracy of the temperature measurements including recorder resolution, thermocouple wire calibration, and cold junction is ±2° F; however, this error will occur in temperature level rather than random temperature fluctuations. A temperature error of ±2° F could result in ratios of equilibrium temperature to stagnation temperature $\left(T_e/T_t\right)$ greater than 1 in stagnation regions of the model. In regions of low heat transfer (h less than 0.001) the ratio T_e/T_t may be questionable, because the wall temperature has not reached equilibrium from the preceding test point.

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An estimated accuracy of heat-transfer coefficient determined by the repeatability of data is dependent upon the magnitude of the heat-transfer coefficient. For heat-transfer coefficients greater than 0.0150 the accuracy is within 10 percent; for heat-transfer coefficients from 0.0010 to 0.0150, within 15 percent; and for heat-transfer coefficients less than 0.0010, within 20 percent. Although heat-transfer coefficients from 0.0003 to 0.0010 are within the accuracy of data reduction, no significance is attached to their magnitude other than to indicate the low-heat-transfer regions. Heat-transfer coefficients less than 0.0003 have been deleted and denoted as LOW to indicate that these values were measured but were of small magnitude.

The accuracy of the precision manometers is within 0.5 lb/sq ft. Therefore, the accuracy of the pressure measurement is limited to that of the electrical transducer which is 0.5 percent of full-scale deflection. In order to increase the accuracy of the pressure data both 5- and 15-lb/sq in. electrical transducers were used. The regions of the model where each transducer was used and the corresponding maximum error in the pressure coefficient is listed in the following table:

Configuration	Transducer used, lb/sq in.	M = 3.50		M = 4.44	
		R	ΔC_p	R	ΔC_p
Reentry:					
Hemispherical heat shield	15	2.5×10^6	±0.0185	2.7×10^6	±0.0256
Remaining surfaces	5		±.0062		±.0085
Exit and escape:					
Hemispherical heat shield	5	4.0	±.0039	2.0	±.0122
Remaining surfaces	15		±.0117		±.0365

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METHOD OF HEAT-TRANSFER DATA REDUCTION

The heat-transfer coefficients were obtained from transient skin-temperature measurements resulting from a stepwise increase in stagnation temperature as shown in reference 2. The following relation, which assumes constant temperature through the skin, negligible lateral heat flow, negligible heat flow to the model interior, and no losses due to radiation, was used:

$$h = \frac{wc_w\left(dT_w/dt\right)}{T_e - T_w} \tag{1}$$

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Equation (1) is written in the following form for complete machine calculation:

$$h = \frac{wc_w\left(T_{w,n} - T_{w,0}\right)}{\frac{T_e}{T_t}\sum\limits_{t=0}^{t=n} T_t - \sum\limits_{t=0}^{t=n} T_w} \tag{2}$$

The summations are evaluated over increments of time according to the trapezoidal rule and the ratio T_e/T_t is experimentally determined.

The location of thermocouples prevented the evaluation of lateral conduction losses for some thermocouples. However, where possible the heat-transfer coefficients were also calculated from the following relation:

$$h_c = \frac{wc_w\left(T_{w,n} - T_{w,0}\right) - Kb\sum\limits_{t=0}^{t=n}\left(\frac{\partial^2 T_w}{\partial x_1{}^2} + \frac{\partial^2 T_w}{\partial y_1{}^2}\right)}{\frac{T_e}{T_t}\sum\limits_{t=0}^{t=n} T_t - \sum\limits_{t=0}^{t=n} T_w} \tag{3}$$

A statistical comparison of the results of equations (2) and (3) for three angles of attack on the three model configurations indicated the standard deviation was less than 3.5 percent for $M = 3.50$ and less than 6.7 percent for $M = 4.44$; therefore, the results of equation (3) are not presented.

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PRESENTATION OF RESULTS

The results of the pressure and heat-transfer measurements are presented in tabular form for each configuration. The heat-transfer measurements obtained at positive angles of attack will be denoted as leeward and those obtained at negative angles of attack will be denoted as windward. The pressure measurements obtained at positive angles of attack will be denoted as windward and those obtained at negative angles of attack will be denoted as leeward. In order to show the location of the orifices and thermocouples on the hemispherical heat shield, on the L
step between the parachute and radar canisters, and on the flat face of 1
the exit configuration, the radial distance is presented in the tables 0
and is illustrated in figure 3. Typical pressure and Stanton number 2
distribution plots are presented for the reentry, exit, and escape con- 2
figurations with the flow direction from left to right.

Results of this investigation are presented as follows:

DISCUSSION

Shadowgraphs and Schlieren Photographs

In the analysis of the distribution of local heat-transfer coefficients on any body a pressure distribution and a knowledge of the flow

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field are desirable. The flow field of a Mercury capsule with regions of multiple intersecting shocks, unsteady flow, and regions of flow separation deviates from the normal flow field of axisymmetric bodies and makes questionable the application of any existent theories to the prediction of local heat-transfer coefficient. Typical shadowgraphs of the three configurations are presented in figure 5 and schlieren photographs in figure 6.

In the reentry configuration at an angle of attack of 0°, the separated flow from the shoulder of the hemispherical heat shield reattaches on the parachute canister (fig. 6(a)) and the resultant wavy shock is indicative of unsteady flow. As the angle of attack is increased the region of separated flow on the windward side decreases, stable reattachment occurs on the conical portion of the capsule, and a second shock occurs at the junction of the conical surface and the parachute canister. The flow on the leeward side of the model is separated for all angles of attack.

In the exit configuration the forward-facing step between the radar and parachute canisters causes a large unstable region of flow separation and very thick turbulent boundary layer on the conical portion of the body. The shoulder of the hemispherical heat shield also produces separated flow on the conical section. An overlay of the shock pattern for both the 20° and the -20° angle of attack at $M = 4.44$ (illustrated in figs. 5(h) and 5(i)) indicates that the visible effect of the flow diverter is confined to the front face and the remaining flow field is essentially similar. At an angle of attack of 20° (with the flow diverter on the windward portion of the surface) a high-density separation occurs on the leeward portion of the front face. The multiple shocks of the front face, of the step between the canisters, and of the reattached flow coalesce, and the resultant flow field with multiple vortices limits mathematical definition of the flow.

The tower of the escape configuration creates extreme turbulence and unstable flow over the entire capsule at low angles of attack and further complicates the flow field as discussed for the exit configuration.

Pressure Distribution

The variation of pressure coefficient along the 180° meridian line for each configuration at $\alpha = 0^{\circ}$ and $M = 3.50$ and 4.44 is illustrated in figure 7. The pressures on the hemispherical heat shield of the reentry configuration were only measured at $M = 3.50$. These pressures are in fair agreement with modified Newtonian pressure distribution. Pressures measured on the hemispherical heat shield of the reentry

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configuration were directly applicable to heat-transfer calculations. For theoretical heat-transfer calculations, the assumption is made that the asymmetry of the flow in the exit configuration (due to the flow diverter) has a negligible effect on the pressures, and the pressures obtained on the conical portion of the exit configuration at $\phi = 180^\circ$, 225°, and 270° for positive angles of attack can be considered as pressures at $\phi = 0^\circ$, 45°, and 90° at negative angles of attack and thereby can be applied to heat-transfer calculation.

Heat Transfer

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Windward and leeward Stanton numbers (obtained at negative and positive angles of attack) are presented for the 0° meridian line.

Reentry configuration.- The measured Stanton numbers on the zero meridian line of the hemispherical heat shield are compared in figure 8 with the theory of Lees (ref. 3) evaluated with a Sibulkin stagnation Stanton number (ref. 4). The use of a Newtonian pressure distribution in Lees' theory underestimates the measured Stanton numbers by approximately 24 percent at $M = 3.50$ and by approximately 34 percent at $M = 4.44$. Correlation, within the range of data repeatability, of measured Stanton numbers with Lees' theory is obtained by using measured pressures and these results are shown as solid symbols.

The conical portion of the body is in a region of separated flow at $\alpha = 0^\circ$ and, as shown in figure 9(a) has very low heat transfer. As determined from the schlieren photographs in figure 6(a) the separated flow reattaches on the parachute canister and the resultant Stanton numbers at $M = 3.50$ are approximately 85 percent of the Stanton numbers on the hemispherical heat shield. Stanton numbers on the radar canister are of the same magnitude as on the parachute canister; however, it is to be pointed out that the effects of the model sting support system have not been isolated and, for this reason, there is some question as to whether the heat-transfer data for the radar canister is representative of the actual Mercury configuration. At $\alpha = -15^\circ$, the overall heating along the windward meridian line of the model is generally higher than at $\alpha = 0^\circ$. The flow reattachment (as illustrated in fig. 5(d)) occurs on the conical portion of the body; however, the Stanton numbers do not exhibit a sudden increase in the region of flow reattachment. Stanton numbers on the parachute canister increase to approximately 90 percent of those on the hemispherical heat shield at $M = 3.50$.

The flow field and distribution of Stanton numbers at $M = 3.50$ and 4.44 are similar; at $M = 4.44$ the regions of high heating on the parachute canister are approximately 60 percent of the stagnation heating at $\alpha = 0^\circ$ and approximately 80 percent at $\alpha = -15^\circ$.

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<u>Exit configuration</u>.- As previously discussed the flow field around the capsule in the exit configuration is so complex that the validity of applying any known theory for the prediction of local pressure or heat-transfer coefficient appears questionable. However, comparison of heat-transfer measurements on the flat face of this configuration with the results of reference 5 indicates the effect of the flow diverter. Also, comparison of Stanton numbers on the conical portion of the capsule with flat-plate theory indicates the limitations imposed on that theory by the strong shocks and resultant turbulence on the conical surface.

At $\alpha = 0^{\circ}$ the three thermocouples on the flat face indicate that the effect of the flow diverter at these locations is within the accuracy of the data. A comparison of the results of this investigation with a corresponding location on the model in reference 5 indicates, as shown in figure 9(b), that the deviation due to the flow diverter is less than 20 percent for $M = 3.50$. At positive angles of attack the thermocouples on the flat face are leeward of the flow diverter; however, as shadowgraphs (fig. 5(h)) indicate, a high-density separation blankets the location of these thermocouples and the maximum Stanton number at $\alpha = 15^{\circ}$ is twice as large as the value at $\alpha = 0^{\circ}$.

The Stanton number distribution on the conical surface (at $\alpha = 0^{\circ}$ and on the leeward side at $\alpha = 15^{\circ}$) is in good agreement with the Van Driest turbulent theory for a flat plate (ref. 6) based on the exposed conical length and the measured local static pressure (as discussed in the section entitled "Pressure Distribution") and assuming a local total head pressure corresponding to a normal shock at free-stream Mach number. At $\alpha = -15^{\circ}$ the flow field on the windward side of the conical surface cannot be theoretically duplicated, and the measured data are much greater than predicted by theory.

Another region of localized high heat transfer occurs on the flat face between the radar and parachute canisters (in a region of high-density flow separation). At $\alpha = 0^{\circ}$ the Stanton number on this flat face is approximately 2 times the maximum value measured on the hemispherical heat shield in the reentry configuration for both Mach numbers. At an angle of attack of -15° the maximum Stanton number is increased to $2\frac{1}{2}$ times the maximum for the hemispherical heat shield at $M = 3.50$ and to 3 times the maximum at $M = 4.44$. Flow separation also occurs upstream of the junction of the conical surface with the hemispherical heat shield (see figs. 5(e) to 5(i)); however, the effect of this separation on the Stanton number was only experimentally indicated at $M = 4.44$.

A comparison of the heat transfer on the hemispherical heat shield of the reentry configuration with the heat transfer on the cone of the

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exit configuration shows that the measured Stanton numbers are of the same magnitude at $\alpha = 0^\circ$ for both Mach numbers. Angle of attack has a negligible effect on the magnitude of the Stanton number measured on the hemispherical heat shield, but has a marked effect on the windward side of the cone where the measured Stanton numbers are equal to or greater than the values measured on the hemispherical heat shield. At $\alpha = -15^\circ$ the maximum Stanton number on the cone is at least 2 times the maximum values measured on the hemispherical heat shield at both Mach numbers.

<u>Escape configuration</u>.- Despite the extreme turbulence generated by the escape tower, the overall Stanton number distribution is very similar to that for the exit configuration at $M = 3.50$ as illustrated in figure 10(a). However, at $M = 4.44$ an increase of Stanton number occurs on the windward conical portion of the escape configuration at $\alpha = -15^\circ$ as illustrated in figure 10(b), and the maximum Stanton number is approximately 3 times as large as the maximum Stanton number on the hemispherical heat shield in the reentry configuration.

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SUMMARY OF RESULTS

Heat-transfer and pressure measurements were obtained on a 1/7-scale model of a Mercury capsule. Tests were made with the reentry, exit, and escape configurations of the model at angles of attack (α) from 0° to $\pm 20^\circ$ and at Mach numbers (M) of 3.50 and 4.44.

In the reentry configuration the Stanton numbers on the hemispherical heat shield could be predicted by Lees' theory by using measured pressures. At $\alpha = 0^\circ$ the separated flow from the shoulder of the hemispherical heat shield reattaches on the parachute canister and the resultant Stanton numbers are approximately 85 percent of the maximum measured Stanton numbers on the hemispherical heat shield at $M = 3.50$ and approximately 60 percent at $M = 4.44$. On the windward side of the parachute canister at an angle of attack of 15° the maximum Stanton numbers at $M = 3.50$ are approximately 90 percent of the maximum Stanton numbers on the hemispherical heat shield and approximately 80 percent at $M = 4.44$.

In the exit configuration the measured Stanton numbers on the conical portion of the capsule (for $\alpha = 0^\circ$ and on the leeward side when $\alpha \neq 0^\circ$) agreed with Van Driest's turbulent theory for a flat plate based on local pressures. These Stanton numbers are of the same magnitude as those measured on the hemispherical heat shield of the reentry configuration. At angle of attack the multiple shocks of the front face, of the step between the canisters, and of the reattached flow coalesce on the

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windward side, and the resultant flow field with multiple vortices limits mathematical definition of the flow.

The tower of the escape configuration creates extreme turbulence over the entire capsule; however, the heating rates are of the same magnitude as the exit configuration except at 15° angle of attack at $M = 4.44$. At this test condition, the maximum Stanton numbers are approximately 3 times as large as Stanton numbers on the hemispherical heat shield of the reentry configuration.

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Langley Research Center,
National Aeronautics and Space Administration,
Langley Field, Va., February 7, 1961.

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TABLE I.- WALL THICKNESS FOR REENTRY, EXIT, AND ESCAPE CONFIGURATION

Thermo-couple	x, in.	Thickness, in.*		
		Reentry	Exit	Escape
1	-0.98	0.0290	0.0300	0.0300
2	-.62	.0280	.0300	.0300
3	-.11	.0290	.0300	.0300
4	.45	.0330		
5	1.69	.0320		
6	2.93	.0330		
7	4.36	.0330		
8	5.78	.0330		
9	7.13	.0330		
10	8.49	.0330		
11	9.27	.0305		
12	10.84	.0305		
13	11.30	.0305		
14	11.59	.0310	.0300	----
15	12.32	.0310	.0315	
16	13.82	.0310		.0305
17	-.98	.0300		
18	-.62	.0290	.0300	.0300
19	-.11	.0290	.0310	.0310
20	.45	.0335		
21	1.69	.0335		
22	2.93	.0325		
23	4.36	.0325		
24	5.78	.0320		
25	7.13	.0325		
26	8.49	.0320		
27	9.27	.0325		
28	10.84	.0325		
29	11.30	.0300		----
30	11.59	.0310		----
31	12.32	.0310		.0305
32	13.82	.0310		.0305
33	-1.28	.0310	----	----
34	-.98	.0310		
35	-.62	.0290	.0310	.0310
36	-.11	.0280	.0310	.0310
37	.45	.0320		
38	1.69	.0320		
39	2.93	.0320		
40	4.36	.0320		
41	5.78	.0325		
42	7.13	.0325		
43	8.49	.0325		
44	9.27	.0305		
45	10.84	.0305		
46	11.30	.0305		
47	11.59	.0310		----
48	12.32	.0305	.0300	.0315
49	13.82	.0305	.0300	.0310
50	15.02		.0310	
51	15.02		.0305	
52	15.02		.0300	
53	15.36		.0150	
54	15.51		.0150	
55	15.12		.0130	

*Thermocouples on exit and escape have same thickness as reentry unless otherwise noted.

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TABLE II.- PRESSURE COEFFICIENTS MEASURED ON REENTRY CONFIGURATION

(a) M = 3.50

x, in.	r, in. (a)	Windward			Leeward		
		C_p at ϕ of:					
		180°	225°	270°	270°	225°	180°
		$\alpha = 0°$			$\alpha = 0°$		
-1.28	.53						1.7457
-.98	2.66				1.6464	1.6409	1.6354
-.62	3.86				1.4867	1.4867	1.4867
-.11	5.05				1.1892	1.1837	1.1837
.45		-.0958	-.0943	-.0943	-.0974	-.0958	-.0958
1.69		-.0988	-.0883	-.0914	-.0898	-.0943	-.1018
2.93		-.0972	-.0988	-.0972	-.1003	-.1003	-.1003
4.36		-.0988	-.0914	-.0972	-.0988	-.0943	-.0988
5.78		-.0914	-.0914	-.0898	-.0898	-.0898	-.0898
7.13		-.0824	-.0764	-.0793	-.0766	-.0780	-.0811
8.49		-.0423	-.0512	-.0407	-.0409	-.0514	-.0424
9.27		.0665	.0620	.0649	.0630	.0556	.0646
10.84		.0696	.0903	.0696	.0690	.0912	.0675
11.30		-.0407	.0709	-.0407	-.0393	.0704	-.0380
11.59	1.90	-.0646	-.0601	-.0601	-.0601	-.0601	-.0632
12.32		.0144	-.0333	.0055	.0036	-.0319	.0125
13.82		.0575	.0471	.0546	.0527	.0452	.0556
		$\alpha = 5°$			$\alpha = -5°$		
-1.28	.53						1.7452
-.98	2.66				1.6143	1.6426	1.6711
-.62	3.86				1.4491	1.5061	1.5288
-.11	5.05				1.1360	1.1871	1.2156
.45		-.0778	-.0854	-.0867	-.0854	-.0854	-.0840
1.69		-.0823	-.0793	-.0823	-.0795	-.0824	-.0854
2.93		-.0823	-.0867	-.0898	-.0885	-.0869	-.0869
4.36		-.0898	-.0854	-.0927	-.0885	-.0840	-.0885
5.78		-.0898	-.0912	-.0883	-.0869	-.0809	-.0766
7.13		-.0854	-.0838	-.0823	-.0795	-.0617	-.0587
8.49		-.0673	-.0778	-.0435	-.0364	-.0364	-.0096
9.27		-.0629	-.0660	.0012	.0112	.0735	.0957
10.84		-.0376	-.0301	.0400	.0527	.0869	.0854
11.30		-.0316	-.0240	-.0435	-.0380	.0690	-.0319
11.59	1.90	-.0271	-.0361	-.0568	-.0483	-.0543	-.0572
12.32		-.0062	-.0376	-.0405	-.0319	-.0335	.0007
13.82		.0266	.0101	-.0151	.0022	.0199	.0893
		$\alpha = 10°$			$\alpha = -10°$		
-1.28	.53						1.7338
-.98	2.66				1.5857	1.6939	1.7451
-.62	3.86				1.4321	1.5687	1.6428
-.11	5.05				1.1189	1.2498	1.3069
.45		-.0805	-.0836	-.0836	-.0795	-.0795	-.0795
1.69		-.0805	-.0791	-.0760	-.0705	-.0750	-.0808
2.93		-.0821	-.0836	-.0836	-.0808	-.0795	-.0779
4.36		-.0852	-.0805	-.0852	-.0839	-.0750	-.0600
5.78		-.0852	-.0866	-.0836	-.0824	-.0526	-.0363
7.13		-.0852	-.0836	-.0791	-.0705	-.0377	-.0287
8.49		-.0760	-.0836	-.0520	-.0437	-.0243	.0144
9.27		-.0715	-.0805	.0050	.0129	.1053	.1558
10.84		-.0430	-.0731	.0245	.0427	.0963	.1053
11.30		-.0430	-.0670	-.0536	-.0451	.0695	-.0287
11.59	1.90	-.0612	-.0581	-.0657	-.0556	-.0585	-.0600
12.32		-.0280	-.0551	-.0686	-.0616	-.0451	-.0108
13.82		.0005	-.0235	-.0520	-.0437	.0158	.0442
		$\alpha = 15°$			$\alpha = -15°$		
-1.28	.53						
-.98	2.66						
-.62	3.86						
-.11	5.05						
.45		-.0778	-.0778	-.0792	-.0852	-.0867	-.0883
1.69		-.0763	-.0733	-.0688	-.0763	-.0807	-.0807
2.93		-.0763	-.0792	-.0778	-.0867	-.0718	-.0344
4.36		-.0807	-.0763	-.0807	-.0883	-.0374	-.0149
5.78		-.0807	-.0807	-.0792	-.0807	-.0270	-.0076
7.13		-.0807	-.0792	-.0733	-.0673	-.0240	-.0076
8.49		-.0733	-.0837	-.0538	-.0464	-.0165	.0283
9.27		-.0688	-.0792	-.0045	.0074	.1180	.1912
10.84		-.0568	-.0763	-.0090	.0029	.0866	.1209
11.30		-.0718	-.0718	-.0702	-.0689	.0658	-.0254
11.59	1.90	-.0763	-.0733	-.0688	-.0733	-.0763	-.0763
12.32		-.0388	-.0718	-.0733	-.0823	-.0568	-.0091
13.82		-.0285	-.0493	-.0583	-.0629	.0074	.0508

[a] Radius is listed only for hemispherical heat shield and the step between parachute and radar canisters.

[redacted]

[redacted]

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TABLE II.- PRESSURE COEFFICIENTS MEASURED ON REENTRY CONFIGURATION - Concluded

(b) M = 4.44

x, in.	r, in. (a)	Windward C_p at ϕ of: 180°	225°	270°	Leeward C_p at ϕ of: 270°	225°	180°
		$\alpha = 0°$			$\alpha = 0°$		
.45		-.0663	-.0599	-.0620	-.0559	-.0540	-.0602
1.69		-.0642	-.0538	-.0559	-.0476	-.0457	-.0580
2.93		-.0599	-.0620	-.0599	-.0559	-.0559	-.0559
4.36		-.0580	-.0538	-.0620	-.0540	-.0457	-.0540
5.78		-.0497	-.0497	-.0538	-.0476	-.0476	-.0457
7.13		-.0414	-.0393	-.0433	-.0414	-.0353	-.0374
8.49		-.0166	-.0185	-.0144	-.0085	-.0147	-.0126
9.27		.0767	.0789	.0789	.0845	.0845	.0845
10.84		.0850	.1037	.0850	.0907	.1030	.0907
11.30		-.0123	.0871	-.0123	-.0085	.0928	-.0085
11.59	1.90	-.0332	-.0332	-.0249	-.0208	-.0270	-.0291
12.32		.0249	-.0102	.0249	.0287	-.0043	.0308
13.82		.0684	.0602	.0706	.0781	.0618	.0741
		$\alpha = 5°$			$\alpha = -5°$		
.45		-.0455	-.0476	-.0497	-.0497	-.0476	-.0497
1.69		-.0476	-.0414	-.0414	-.0393	-.0374	-.0497
2.93		-.0476	-.0476	-.0497	-.0497	-.0497	-.0497
4.36		-.0519	-.0436	-.0538	-.0519	-.0393	-.0436
5.78		-.0476	-.0519	-.0497	-.0457	-.0353	-.0291
7.13		-.0476	-.0436	-.0455	-.0393	-.0230	-.0230
8.49		-.0310	-.0393	-.0126	-.0104	-.0043	.0185
9.27		-.0289	-.0227	.0497	.0474	.1113	.1340
10.84		.0021	.0332	.0765	.0824	.1113	.1051
11.30		.0021	.0289	-.0083	-.0085	.0907	-.0043
11.59	1.90	-.0062	-.0083	-.0104	-.0187	-.0249	-.0249
12.32		.0332	-.0083	-.0043	-.0085	-.0168	.0163
13.82		.0682	.0497	.0268	.0225	.0452	.0557
		$\alpha = 10°$			$\alpha = -10°$		
.45		-.0435	-.0456	-.0435	-.0456	-.0475	-.0518
1.69		-.0435	-.0373	-.0413	-.0394	-.0373	-.0475
2.93		-.0456	-.0475	-.0475	-.0456	-.0456	-.0333
4.36		-.0475	-.0413	-.0475	-.0475	-.0228	-.0166
5.78		-.0475	-.0475	-.0475	-.0456	-.0124	-.0021
7.13		-.0497	-.0435	-.0435	-.0373	-.0062	.0021
8.49		-.0394	-.0456	-.0145	-.0124	.0062	.0352
9.27		-.0352	-.0413	.0561	.0580	.1262	.1656
10.84		-.0083	-.0268	.0601	.0641	.1076	.1178
11.30		-.0062	-.0228	-.0166	-.0188	.0848	.0000
11.59	1.90	-.0311	-.0268	-.0268	-.0249	-.0290	-.0311
12.32		.0145	-.0247	-.0330	-.0333	-.0249	.0164
13.82		.0456	.0083	-.0185	-.0188	.0330	.0580
		$\alpha = 15°$			$\alpha = -15°$		
.45		-.0475	-.0456	-.0475	-.0457	-.0497	-.0497
1.69		-.0435	-.0373	-.0392	-.0393	-.0353	-.0249
2.93		-.0456	-.0475	-.0475	-.0497	-.0187	.0102
4.36		-.0475	-.0413	-.0475	-.0497	.0040	.0185
5.78		-.0456	-.0475	-.0456	-.0353	.0102	.0268
7.13		-.0475	-.0413	-.0373	-.0291	.0081	.0225
8.49		-.0435	-.0475	-.0207	-.0168	.0142	.0535
9.27		-.0456	-.0435	.0228	.0329	.1319	.1958
10.84		-.0228	-.0413	.0166	.0246	.1030	.1362
11.30		-.0352	-.0373	-.0352	-.0332	.0845	.0040
11.59	1.90	-.0435	-.0435	-.0309	-.0332	-.0393	-.0374
12.32		-.0124	-.0413	-.0392	-.0414	-.0249	.0121
13.82		.0000	-.0309	-.0247	-.0270	.0268	.0701

[a]Radius is listed only for hemispherical heat shield and the step between parachute and radar canisters.

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[redacted]

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TABLE III.- PRESSURE COEFFICIENTS MEASURED ON EXIT CONFIGURATION

(a) M = 3.50

x, in.	r, in. (a)	Windward			Leeward		
		C_p at ϕ of:					
		180°	225°	270°	270°	225°	180°
		$\alpha = 0°$			$\alpha = 0°$		
-.98	2.66				-.0694	-.0694	-.0648
-.62	3.86				-.0648	-.0704	-.0704
-.11	5.05				-.0666	-.0676	-.0684
.45					.5098	.5014	.4930
1.69					.2576	.2534	.2576
2.93					.2449	.2449	.2449
4.36					.2281	.2239	.2281
5.78					.2197	.2071	.2155
7.13					.2155	.2071	.2281
8.49					.1440	.1777	.1399
9.27					.0138	.0179	.0095
10.84					.0011	.0179	.0138
11.30					.1861	-.0073	.2155
11.59	1.90				.3711	.3795	.3753
12.32					.3543	.3416	.3543
13.82					.0473	.0683	.0683
		$\alpha = 5°$			$\alpha = -5°$		
-.98	2.66	-.0665	-.0712	-.0683	-.0694	-.0722	-.0656
-.62	3.86	-.0721	-.0703	-.0617	-.0656	-.0713	-.0694
-.11	5.05	-.0712	-.0693	-.0655	-.0676	-.0713	-.0676
.45		.3439	.4378	.5362	.5017	.6754	.7178
1.69		.1650	.1963	.2634	.2518	.3577	.4001
2.93		.1561	.1874	.2679	.2434	.3450	.3874
4.36		.1471	.1739	.2500	.2306	.3112	.3662
5.78		.1471	.1695	.2277	.2264	.2858	.3366
7.13		.1382	.1739	.2321	.2434	.2730	.3154
8.49		.1025	.1203	.1561	.1460	.2560	.2095
9.27		.0041	-.0003	.0041	-.0065	.0401	.0485
10.84		-.0138	-.0049	-.0003	-.0065	.0317	.0359
11.30		.0489	-.0138	.2098	.2392	.0231	.2688
11.59	1.90	.1963	.2545	.3528	.4382	.4255	.4213
12.32		.1650	.1338	.2455	.2604	.4043	.4382
13.82		.0890	.0801	.0533	.0655	.1205	.1248
		$\alpha = 10°$			$\alpha = -10°$		
-.98	2.66	-.0704	-.0760	-.0760	-.0730	-.0748	-.0710
-.62	3.86	-.0760	-.0760	-.0694	-.0691	-.0730	-.0738
-.11	5.05	-.0770	-.0760	-.0742	-.0738	-.0730	-.0738
.45		.2353	.2997	.5058	.5114	.8892	1.0674
1.69		.1065	.1238	.2440	.2569	.4988	.6261
2.93		.1023	.1194	.2396	.2569	.4776	.6091
4.36		.1065	.1065	.2267	.2441	.4563	.5921
5.78		.1065	.1109	.2096	.2229	.4266	.5539
7.13		.0980	.1280	.1924	.2017	.3969	.5327
8.49		.0766	.1065	.1238	.1296	.3459	.3206
9.27		-.0136	-.0222	-.0008	.0022	.0744	.1168
10.84		-.0265	-.0093	-.0093	.0022	.0701	.0998
11.30		.0165	-.0179	.2010	.1592	.0744	.4563
11.59	1.90	.1795	.2783	.3727	.4479	.4691	.5836
12.32		.1538	.1795	.3384	.3248	.4606	.5242
13.82		.0722	-.0050	.0551	.0956	.1762	.2229
		$\alpha = 15°$			$\alpha = -15°$		
-.98	2.66	-.0732	-.0808	-.0798	-.0768	-.0798	-.0732
-.62	3.86	-.0798	-.0808	-.0732	-.0722	-.0778	-.0778
-.11	5.05	-.0808	-.0788	-.0788	-.0768	-.0788	-.0798
.45		.1721	.1807	.5426	.5357	1.2302	1.4028
1.69		.0773	.0600	.2453	.2622	.6410	.8514
2.93		.0730	.0600	.2410	.2537	.6284	.8346
4.36		.0815	.0600	.2237	.2285	.6452	.8009
5.78		.0815	.0730	.1979	.2117	.5862	.8136
7.13		.0730	.0815	.1807	.1949	.5526	.7757
8.49		.0730	.0600	.0815	.0770	.4011	.4642
9.27		-.0219	-.0434	-.0089	.0096	.0981	.1738
10.84		-.0304	-.0434	-.0132	-.0072	.1022	.1738
11.30		.0169	-.0434	.1592	.1612	.1022	.6789
11.59	1.90	.1936	.1807	.2884	.3379	.5569	.8220
12.32		.1592	.1721	.2668	.3127	.5105	.6367
13.82		-.0132	-.0348	.0600	.0939	.2285	.3043
		$\alpha = 20°$			$\alpha = -20°$		
-.98	2.66	-.0826	-.0920	-.0911	-.0891	-.0901	-.0826
-.62	3.86	-.0892	-.0902	-.0836	-.0806	-.0901	-.0901
-.11	5.05	-.0902	-.0883	-.0902	-.0873	-.0921	-.0929
.45		.1378	.0688	.5819	.5854	1.4860	1.7440
1.69		.0558	-.0174	.2585	.2808	.7798	1.0251
2.93		.0602	-.0174	.2542	.2808	.8180	1.0631
4.36		.0645	-.0046	.2369	.2428	.7757	1.1266
5.78		.0645	-.0088	.1938	.2175	.7460	1.0378
7.13		.0730	-.0002	.1378	.1582	.7630	1.1689
8.49		.0817	.0085	.0257	.0525	.5473	.6445
9.27		-.0088	-.0347	-.0303	-.0151	.1540	.3020
10.84		-.0434	-.0606	-.0088	-.0066	.1836	.3190
11.30		.0257	-.0606	.1378	.1371	.1836	1.0421
11.59	1.90	.2672	.0774	.2284	.2808	.7460	1.2027
12.32		.1334	.0558	.2240	.2428	.6234	.8728
13.82		-.0046	-.0046	.0946	.0990	.3105	.4458

[a] Radius is listed only for hemispherical heat shield and the step between parachute and radar canisters.

[redacted]

[redacted]

TABLE III. - PRESSURE COEFFICIENTS MEASURED ON EXIT CONFIGURATION - Concluded

(b) M = 4.44

x, in.	r, in. (a)	Windward C_p at ϕ of: 180°	Windward 225°	Windward 270°	Leeward 270°	Leeward 225°	Leeward 180°
		α = 0°			α = 0°		
-.98	2.66				-.0256	-.0283	-.0226
-.62	3.86				-.0165	-.0344	-.0256
-.11	5.05				-.0283	-.0313	-.0283
.45					.4543	.5261	.4661
1.69					.2268	.2747	.2747
2.93					.2386	.2386	.2508
4.36					.2268	.2268	.2386
5.78					.2268	.2147	.2268
7.13					.2268	.2147	.2268
8.49					.1429	.1908	.1668
9.27					.0711	.0711	.0711
10.84					.0593	.0711	.0711
11.30					.2147	.0711	.2147
11.59	1.90				.4304	.4183	.3822
12.32					.3465	.3104	.3465
13.82					.1072	.1429	.1550
		α = 5°			α = -5°		
-.98	2.66	-.0254	-.0430	-.0281	-.0340	-.0458	-.0340
-.62	3.86	-.0281	-.0400	-.0254	-.0340	-.0371	-.0340
-.11	5.05	-.0369	-.0400	-.0369	-.0401	-.0428	-.0428
.45		.2519	.3359	.3959	.3735	.6630	.7351
1.69		.1558	.1676	.1917	.1928	.3374	.3977
2.93		.1558	.1436	.2039	.1685	.3131	.3856
4.36		.1558	.1436	.1798	.1685	.2771	.3374
5.78		.1558	.1558	.1676	.1685	.2289	.3013
7.13		.1558	.1436	.1676	.1685	.2167	.2771
8.49		.1077	.1436	.1317	.0964	.1928	.1567
9.27		.0237	.0477	.0356	.0118	.0361	.0361
10.84		.0356	.0356	.0477	.0000	.0239	.0239
11.30		.1676	.0356	.1798	.1928	.0239	.2289
11.59	1.90	.2638	.2878	.3481	.4338	.4099	.3977
12.32		.2279	.2157	.2397	.3013	.3131	.3131
13.82		.0477	.0836	.0836	.0600	.1082	.1446
		α = 10°			α = -10°		
-.98	2.66	-.0281	-.0518	-.0369	-.0340	-.0489	-.0371
-.62	3.86	-.0369	-.0457	-.0312	-.0340	-.0401	-.0371
-.11	5.05	-.0488	-.0488	-.0457	-.0401	-.0458	-.0458
.45		.1571	.2299	.3749	.4240	.9812	1.1992
1.69		.0847	.0968	.1693	.1941	.4725	.6300
2.93		.0728	.0968	.1693	.1820	.4483	.5814
4.36		.0847	.0847	.1815	.1820	.4240	.5696
5.78		.0968	.0968	.1571	.1456	.3876	.5332
7.13		.0728	.1090	.1571	.1335	.3273	.4604
8.49		.0728	.0968	.0847	.0364	.2423	.2423
9.27		.0244	.0122	.0122	.0125	.0364	.0728
10.84		.0000	.0244	.0122	-.0118	.0364	.0607
11.30		.0606	.0244	.1693	.1092	.0485	.3637
11.59	1.90	.1815	.1815	.3992	.3876	.3637	.4725
12.32		.1693	.1815	.2540	.2787	.3394	.3758
13.82		.0728	.0362	.0484	.0849	.1577	.2059
		α = 15°			α = -15°		
-.98	2.66	-.0285	-.0520	-.0346	-.0481	-.0540	-.0449
-.62	3.86	-.0403	-.0433	-.0315	-.0390	-.0449	-.0449
-.11	5.05	-.0490	-.0490	-.0520	-.0512	-.0512	-.0512
.45		.1087	.1329	.3986	.5794	1.4570	1.4570
1.69		.0845	.0604	.1812	.2411	.7173	.8302
2.93		.0604	.0483	.1691	.2285	.6797	.9553
4.36		.0604	.0483	.1570	.2285	.6421	.9055
5.78		.0845	.0483	.1691	.1909	.6296	.8553
7.13		.0725	.0604	.1208	.1658	.5418	.8051
8.49		.0845	.0242	.0483	.0655	.3536	.4414
9.27		.0121	-.0121	.0121	.0404	.1157	.1658
10.84		.0121	-.0242	-.0121	.0279	.1408	.2160
11.30		.0362	-.0362	.1329	.1408	.1282	.6546
11.59	1.90	.1449	.0966	.2899	.2909	.4916	.6672
12.32		.1449	.1087	.2416	.2784	.4038	.5543
13.82		.0483	.0121	.0604	.1031	.2784	.3285
		α = 20°			α = -20°		
-.98	2.66	-.0371	-.0607	-.0431	-.0518	-.0664	-.0518
-.62	3.86	-.0489	-.0576	-.0458	-.0518	-.0545	-.0518
-.11	5.05	-.0576	-.0576	-.0549	-.0606	-.0664	-.0637
.45		.0610	.0610	.4250	.6478	1.6244	1.7463
1.69		.0489	.0125	.2430	.2814	.7453	1.0017
2.93		.0489	.0003	.2187	.2570	.7697	1.0260
4.36		.0489	-.0118	.2066	.2570	.8432	1.2580
5.78		.0489	.0125	.1823	.1839	.7697	1.1727
7.13		.0610	.0125	.1095	.1473	.8307	1.1117
8.49		.0610	.0125	.0367	.0620	.5012	.5621
9.27		.0246	-.0118	.0125	.0129	.1717	.2692
10.84		.0003	-.0361	.0246	.0251	.2083	.3793
11.30		.0367	-.0361	.1217	.1107	.2326	1.1117
11.59	1.90	.1702	.0974	.2187	.1839	.5990	1.0017
12.32		.1217	.0853	.1823	.1961	.4768	.7575
13.82		.0367	.0125	.0974	.1107	.3427	.4402

[a]Radius is listed only for hemispherical heat shield and the step between parachute and radar canisters.

[redacted]

L-1022

[redacted]

L-1022

TABLE IV. - PRESSURE COEFFICIENTS MEASURED ON ESCAPE CONFIGURATION

(a) M = 3.50

x, in.	r, in. (a)	Windward C_p at ϕ of: 180°	Windward 225°	Windward 270°	Leeward 270°	Leeward 225°	Leeward 180°
		$\alpha = 0°$			$\alpha = 0°$		
-.98	2.66	-.0759	-.0845	-.0807	-.0732	-.0836	-.0770
-.62	3.86	-.0769	-.0835	-.0769	-.0808	-.0827	-.0798
-.11	5.05	-.0789	-.0835	-.0835	-.0817	-.0827	-.0798
.45		.5390	.7337	.6279	.6031	.7094	.4926
1.69		.2556	.2979	.2852	.2841	.2800	.2268
2.93		.2302	.2810	.2810	.2719	.2719	.1982
4.36		.2133	.2640	.2640	.2636	.2473	.1859
5.78		.2048	.2387	.2302	.2391	.2227	.1696
7.13		.1964	.2006	.2048	.2023	.1819	.1655
8.49		.1245	.1921	.1415	.1288	.1696	.1083
9.27		.0103	.0061	.0145	.0061	-.0022	-.0184
10.84		-.0066	.0103	-.0066	-.0144	.0020	-.0307
11.30		.0865	—	.1076	.1164	—	.0715
12.32		.1711	.1964	.1499	.1533	.1737	.1492
13.82		.0992	.1076	.1288	.1124	.0960	.0837
		$\alpha = 5°$			$\alpha = -5°$		
-.98	2.66	-.0715	-.0762	-.0629	-.0703	-.0788	-.0713
-.62	3.86	-.0752	-.0743	-.0686	-.0741	-.0788	-.0713
-.11	5.05	-.0762	-.0752	-.0705	-.0788	-.0779	-.0760
.45		.3164	.4183	.5796	.6609	.8410	.7755
1.69		.1381	.1551	.2697	.2926	.3663	.4072
2.93		.1296	.1381	.2612	.2804	.3540	.3991
4.36		.1212	.1296	.2443	.2599	.3335	.3745
5.78		.1084	.1084	.2230	.2313	.3008	.3458
7.13		.1041	.1041	.1806	.1781	.2804	.2885
8.49		.1168	.1168	.0915	.0839	.2026	.1617
9.27		.0234	.0107	-.0274	-.0102	.0062	.0267
10.84		-.0317	.0023	-.0274	-.0143	.0103	.0103
11.30		.0447	—	.0999	.0470	—	.1617
12.32		.1084	.1168	.0362	.1493	.3008	.2926
13.82		.0744	.0829	.1296	.0758	.0389	.1044
		$\alpha = 10°$			$\alpha = -10°$		
-.98	2.66	-.0724	-.0771	-.0668	-.0705	-.0789	-.0753
-.62	3.86	-.0752	-.0771	-.0714	-.0733	-.0761	-.0743
-.11	5.05	-.0771	-.0771	-.0752	-.0781	-.0781	-.0789
.45		.1346	.3815	.5432	.6047	.9382	1.0342
1.69		.0750	.1005	.2410	.2754	.4629	.5588
2.93		.0707	.1048	.2283	.2795	.4629	.5379
4.36		.0664	.1133	.2239	.2754	.4338	.5171
5.78		.0622	.1090	.2069	.2503	.4004	.4629
7.13		.0579	.1005	.1473	.2252	.3712	.4504
8.49		.0536	.0452	.0111	.0751	.3254	.2461
9.27		.0196	-.0272	-.0570	-.0290	.0544	.0585
10.84		-.0230	-.0486	-.0570	-.0290	.0418	.0585
11.30		-.0016	—	.0452	.0710	—	.3378
12.32		.0707	.0792	.0068	.2337	.3921	.5629
13.82		.0111	.0282	.1771	.0377	.1044	.1377
		$\alpha = 15°$			$\alpha = -15°$		
-.98	2.66	-.0771	-.0855	-.0713	-.0714	-.0836	-.0799
-.62	3.86	-.08[illegible]7	-.0855	-.0807	-.0761	-.0836	-.0818
-.11	5.05	-.0845	-.0845	-.0855	-.0818	-.0836	-.0855
.45		.1624	.2807	.4708	.5343	1.2817	1.4497
1.69		.0694	.0567	.2046	.2655	.6224	.8325
2.93		.0609	.0482	.1877	.2572	.6098	.8115
4.36		.0525	.0440	.1624	.2487	.5973	.7568
5.78		.0525	.0271	.1328	.2403	.5385	.7064
7.13		.0525	.0229	.1074	.2319	.5132	.6183
8.49		.0567	-.0152	.0144	.0723	.3831	.3746
9.27		-.0025	-.0405	-.0574	-.0116	.0808	.1186
10.84		-.0321	-.0659	-.0659	-.0158	.0976	.1059
11.30		-.0236	—	.0229	.1143	—	.4965
12.32		.0694	.0313	.0355	.3579	.5763	.6056
13.82		-.0109	-.0236	.2892	.0640	.1731	.2991

[a]Radius is listed only for hemispherical heat shield.

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TABLE IV.- PRESSURE COEFFICIENTS MEASURED ON ESCAPE CONFIGURATION - Concluded

(b) M = 4.44

x, in.	r, in. (a)	Windward			Leeward		
		C_p at ϕ of:					
		180°	225°	270°	270°	225°	180°
		α = 0°			α = 0°		
-.98	2.66				-.0427	-.0545	-.0281
-.62	3.86				-.0400	-.0545	-.0427
-.11	5.05				-.0457	-.0545	-.0518
.45					.5875	.8740	.4880
1.69					.3010	.3386	.2763
2.93					.3010	.3010	.2513
4.36					.3010	.3010	.2265
5.78					.2513	.2763	.2015
7.13					.2140	.2140	.1768
8.49					.1392	.2015	.1642
9.27					.0271	.0647	.0521
10.84					.0271	.0521	.0271
11.30					.1145	——	.0894
12.32					.2015	.2015	.2015
13.82					.1266	.1145	.1392
		α = 5°			α = -5°		
-.98	2.66	-.0335	-.0516	-.0157	-.0401	-.0519	-.0253
-.62	3.86	-.0277	-.0455	-.0335	-.0401	-.0519	-.0458
-.11	5.05	-.0516	-.0516	-.0455	-.0458	-.0489	-.0519
.45		.2471	.4133	.5028	.6165	.9919	.8291
1.69		.1576	.1832	.2728	.2656	.4035	.4284
2.93		.1193	.1576	.2471	.2407	.3785	.4035
4.36		.1193	.1449	.2089	.2282	.3660	.4035
5.78		.1193	.1193	.1959	.1904	.3033	.3532
7.13		.1193	.1066	.1832	.1406	.2781	.3033
8.49		.0937	.1066	.0554	.0529	.1780	.1530
9.27		.0680	.0554	.0297	-.0098	.0027	.0276
10.84		.0297	.0427	.0171	-.0098	.0027	.0276
11.30		.0810	——	.0810	.0276	——	.2282
12.32		.1319	.1193	.0810	.1153	.2282	.2656
13.82		.0937	.0937	.0937	.0779	.0529	.1153
		α = 10°			α = -10°		
-.98	2.66	-.0279	-.0517	-.0191	-.0401	-.0519	-.0047
-.62	3.86	-.0218	-.0456	-.0367	-.0428	-.0546	-.0371
-.11	5.05	-.0487	-.0487	-.0456	-.0546	-.0576	-.0546
.45		.0939	.3368	.4521	.5777	1.0900	1.1527
1.69		.0555	.1065	.2218	.2777	.5025	.6401
2.93		.0555	.0939	.1963	.2777	.4776	.5902
4.36		.0684	.0810	.1963	.2525	.4402	.5652
5.78		.0684	.0810	.1834	.2400	.3900	.4651
7.13		.0555	.0555	.1579	.1901	.3526	.4024
8.49		.0555	.0299	.0044	.0152	.3027	.2525
9.27		.0299	-.0085	-.0340	-.0226	.0526	.0651
10.84		.0044	-.0340	-.0214	-.0101	.0651	.0651
11.30		.0170	——	.0299	.0526	——	.3526
12.32		.0939	.0555	.0555	.2275	.3526	.5025
13.82		.0555	.0555	.1449	.0027	.1149	.2026
		α = 15°			α = -15°		
-.98	2.66	-.0427	-.0576	-.0251	-.0222	-.0576	-.0313
-.62	3.86	-.0369	-.0545	-.0427	-.0401	-.0519	-.0313
-.11	5.05	-.0518	-.0576	-.0576	-.0519	-.0576	-.0576
.45		.1046	.1426	.4206	.5036	1.3549	1.6556
1.69		.0538	.0413	.2059	.2531	.7038	.9919
2.93		.0413	.0288	.1805	.2407	.6664	.9542
4.36		.0538	.0159	.1676	.2407	.6539	.8666
5.78		.0667	.0159	.1426	.2282	.5538	.7665
7.13		.0413	.0159	.1426	.2407	.4661	.6289
8.49		.0413	.0034	.0159	.0654	.3910	.4035
9.27		.0159	-.0220	-.0091	.0027	.1153	.1530
10.84		.0034	-.0220	-.0091	.0152	.1153	.1530
11.30		-.0091	——	.0538	.1406	——	.4533
12.32		.0792	.0288	.1297	.3283	.4661	.5912
13.82		.0288	.0159	.2689	.0529	.1904	.2407

[a]Radius is listed only for hemispherical heat shield.

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TABLE V.- HEAT-TRANSFER MEASUREMENTS ON REENTRY CONFIGURATION

(a) $M = 3.50$

x, in.	r, in. (a)	$\alpha = 0^{\circ}$ Leeward (T_t = 712.5°) ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	$\alpha = 0^{\circ}$ Windward (T_t = 717.5°) ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-1.28	.53	0	1.00729	637.5	.00679	.001827	0	1.00056	642.1	.00723	.001953
-.98	2.66	0	1.00505	635.8	.00686	.001846	90	.99943	641.1	.00673	.001818
		45	1.00954	638.1	.00659	.001773	45	1.00224	642.5	.00706	.001907
		90	1.00561	635.8	.00635	.001709	0	.99887	640.8	.00728	.001967
-.62	3.86	0	1.00000	632.5	.00641	.001725	90	.99383	637.1	.00649	.001753
		45	1.00056	632.8	.00633	.001703	45	.99439	637.5	.00683	.001845
		90	1.00056	632.1	.00610	.001641	0	.99383	637.5	.00676	.001826
-.11	5.05	0	.98821	624.8	.00590	.001588	90	.97421	624.1	.00625	.001688
		45	.97979	620.1	.00589	.001585	45	.97533	625.1	.00618	.001669
		90	.97867	618.8	.00585	.001574	0	.98598	631.5	.00597	.001613
.45		0	—	574.8	LOW	LOW	90	—	588.1	LOW	LOW
		45	—	575.1	LOW	LOW	45	—	587.1	LOW	LOW
		90	—	574.5	LOW	LOW	0	—	587.1	LOW	LOW
4.36		0	—	575.8	LOW	LOW	90	—	—	—	—
		45	—	574.5	LOW	LOW	45	—	—	—	—
		90	—	573.8	LOW	LOW	0	—	—	—	—
5.78		0	—	578.1	LOW	LOW	90	—	592.8	LOW	LOW
		45	—	578.5	LOW	LOW	45	—	592.5	LOW	LOW
		90	—	579.1	LOW	LOW	0	—	592.5	LOW	LOW
7.13		0	.99719	591.1	.00065	.000175	90	1.01009	601.5	.00062	.000167
		45	1.00448	595.1	.00061	.000164	45	1.01121	601.1	.00060	.000162
		90	1.00000	592.8	.00069	.000186	0	1.00672	598.8	.00065	.000176
8.49		0	.99382	602.1	.00257	.000692	90	.98486	603.5	.00309	.000835
		45	1.00729	605.8	.00231	.000622	45	1.00448	610.1	.00249	.000673
		90	.98765	598.5	.00286	.000770	0	.99271	607.5	.00274	.000740
9.27		0	.93321	588.8	.00576	.001550	90	.92375	591.1	.00633	.001710
		45	.93265	595.5	.00646	.001738	45	.93048	595.1	.00699	.001888
		90	.92703	591.1	.00569	.001531	0	.92936	593.8	.00597	.001613
10.84		0	.92535	580.8	.00531	.001429	90	.91646	583.1	.00596	.001610
		45	.92928	587.5	.00669	.001800	45	.92487	592.1	.00694	.001875
		90	.92198	579.5	.00533	.001434	0	.92431	586.8	.00525	.001418
11.30		0	.91412	561.1	.00367	.000988	90	.91478	567.8	.00371	.001002
		45	.94668	599.1	.00522	.001405	45	.94169	598.5	.00526	.001421
		90	.92310	565.5	.00343	.000923	0	.91030	566.1	.00388	.001048
11.59	1.90	0	.95734	568.8	.00091	.000245	90	.94842	572.8	.00148	.000400
		45	.95117	568.5	.00180	.000484	45	.94225	570.5	.00192	.000519
		90	.95566	572.5	.00131	.000352	0	.94954	573.5	.00109	.000294
12.32		0	.94668	597.5	.00446	.001200	90	.93833	604.1	.00554	.001497
		45	.95902	595.8	.00356	.000958	45	.95178	594.1	.00401	.001083
		90	.94443	595.5	.00564	.001518	0	.94225	596.5	.00478	.001291
13.82		0	.92254	584.8	.00665	.001789	90	.92543	594.1	.00709	.001915
		45	.92423	586.1	.00565	.001520	45	.91814	589.8	.00598	.001615
		90	.93826	594.1	.00666	.001792	0	.91814	589.1	.00664	.001794

[a]Radius is listed only for hemispherical heat shield and the step between parachute and radar canisters.

[b]Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leq h \leq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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L-1022

TABLE V. - HEAT-TRANSFER MEASUREMENTS ON REENTRY CONFIGURATION - Continued

(a) M = 3.50 - Continued

x, in.	r, in. (a)	$\alpha = 5^{\circ}$ Leeward (T_t = 715.8°) ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	$\alpha = -5^{\circ}$ Windward (T_t = 715.5°) ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-1.28	.53	0	.99944	644.8	.00723	.001950	0	1.00000	643.8	.00731	.001975
-.98	2.66	0	.99498	641.8	.00720	.001942	90	1.00000	641.5	.00640	.001729
		45	1.00111	644.5	.00675	.001821	45	1.00279	644.5	.00725	.001959
		90	.99777	644.1	.00785	.002118	0	.99944	643.1	.00752	.002032
-.62	3.86	0	.98885	637.1	.00660	.001780	90	.99328	636.8	.00645	.001743
		45	.99163	637.8	.00636	.001716	45	.99552	639.8	.00699	.001889
		90	.99498	641.1	.00629	.001697	0	.99496	639.8	.00701	.001894
-.11	5.05	0	.98104	629.5	.00541	.001459	90	.97369	624.1	.00618	.001670
		45	.97212	624.5	.00572	.001543	45	.97593	627.8	.00655	.001770
		90	.97379	627.5	.00606	.001635	0	.98712	634.1	.00620	.001675
.45		0	.98829	593.8	.00079	.000213	90	.98656	588.1	.00044	.000119
		45	.98662	589.1	.00051	.000138	45	.98936	588.5	.00037	.000100
		90	.98327	587.1	.00039	.000105	0	.98656	587.5	.00038	.000103
1.69		0	1.00222	601.8	.00062	.000167	90	———	601.8	LOW	LOW
		45	1.00668	600.8	.00033	.000089	45	———	605.5	LOW	LOW
		90	———	597.5	LOW	LOW	0	———	602.8	LOW	LOW
2.93		0	.99888	598.5	.00056	.000151	90	———	604.1	LOW	LOW
		45	1.00557	601.5	.00041	.000111	45	———	610.1	LOW	LOW
		90	———	598.5	LOW	LOW	0	———	596.8	LOW	LOW
4.36		0	———	606.5	LOW	LOW	90	———	611.1	LOW	LOW
		45	1.01170	604.8	.00041	.000111	45	———	610.1	LOW	LOW
		90	———	607.1	LOW	LOW	0	———	599.8	LOW	LOW
5.78		0	1.00334	601.8	.00059	.000159	90	1.02405	609.8	.00030	.000081
		45	1.00947	604.1	.00057	.000154	45	1.01062	608.8	.00141	.000381
		90	———	613.5	LOW	LOW	0	1.00279	603.5	.00129	.000349
7.13		0	.99386	598.1	.00084	.000227	90	.99496	600.1	.00153	.000413
		45	1.00111	602.5	.00095	.000256	45	.94403	576.1	.00238	.000643
		90	1.00891	609.8	.00128	.000345	0	.94067	576.5	.00288	.000778
8.49		0	.99219	603.5	.00133	.000359	90	.94067	580.5	.00308	.000832
		45	.98550	597.1	.00137	.000370	45	.92724	576.5	.00400	.001081
		90	.95595	588.5	.00258	.000696	0	.92780	582.8	.00475	.001283
9.27		0	.98996	600.5	.00111	.000299	90	.91380	574.8	.00428	.001156
		45	.96209	588.8	.00216	.000583	45	.90597	583.8	.00774	.002091
		90	.92585	580.8	.00360	.000971	0	.91325	593.8	.00648	.001751
10.84		0	.97825	608.5	.00274	.000739	90	.88756	564.1	.00537	.001451
		45	.92696	579.5	.00380	.001025	45	.90709	581.5	.00709	.001916
		90	.89023	566.5	.00491	.001325	0	.91157	581.5	.00613	.001656
11.30		0	.97101	602.8	.00305	.000823	90	.88533	550.8	.00360	.000973
		45	.94034	587.5	.00349	.000941	45	.92500	588.8	.00553	.001494
		90	.88744	553.5	.00331	.000893	0	.89651	560.5	.00430	.001162
11.59	1.90	0	.97602	603.8	.00259	.000699	90	.92500	560.8	.00161	.000435
		45	.94480	581.5	.00246	.000664	45	.92052	559.5	.00216	.000584
		90	.92696	562.8	.00150	.000405	0	.93619	561.8	.00094	.000254
12.32		0	.97156	615.1	.00444	.001198	90	.90933	580.8	.00407	.001100
		45	.94257	585.1	.00307	.000828	45	.92500	577.8	.00383	.001035
		90	.91080	572.1	.00373	.001006	0	.92556	585.1	.00480	.001297
13.82		0	.96153	613.1	.00543	.001465	90	.90877	571.8	.00475	.001283
		45	.91749	584.5	.00532	.001435	45	.89763	570.8	.00568	.001535
		90	.90857	573.1	.00457	.001233	0	.90317	576.8	.00621	.001678

[a]Radius is listed only for hemispherical heat shield and the step between parachute and radar canisters.

[b]Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leq h \leq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

[redacted]

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L-1022

TABLE V.- HEAT-TRANSFER MEASUREMENTS ON REENTRY CONFIGURATION - Continued

(a) M = 3.50 - Continued

		$\alpha = 10^{0}$					$\alpha = -10^{0}$				
x, in.	r, in. (a)	Leeward (T_t = 717.8°)					Windward (T_t = 715.2°)				
		ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-1.28	.53	0	.99499	638.8	.00689	.001863	0	.99609	641.1	.00718	.001947
-.98	2.66	0	.98998	633.8	.00665	.001798	90	.99497	639.1	.00657	.001782
		45	.99666	637.8	.00642	.001736	45	.99944	643.5	.00709	.001923
		90	.99554	639.1	.00654	.001769	0	.99720	644.1	.00770	.002088
-.62	3.86	0	.98330	628.8	.00598	.001617	90	.98883	634.5	.00621	.001684
		45	.98664	630.5	.00601	.001625	45	.99218	640.1	.00706	.001914
		90	.99053	636.1	.00639	.001728	0	.99330	642.1	.00735	.001993
-.11	5.05	0	.97551	621.5	.00508	.001374	90	.96930	621.8	.00597	.001619
		45	.96660	617.1	.00542	.001466	45	.97321	628.8	.00670	.001817
		90	.96938	622.5	.00612	.001655	0	.98493	637.1	.00656	.001779
.45		0	.97105	584.5	.00073	.000197	90	.98102	586.1	.00043	.000117
		45	.96716	579.8	.00050	.000135	45	.98437	586.5	.00032	.000087
		90	.97050	581.8	.00048	.000130	0	.98102	584.8	.00034	.000092
1.69		0	.98831	594.5	.00062	.000168	90	———	600.5	LOW	LOW
		45	.98441	588.8	.00030	.000081	45	———	———	———	———
		90	———	592.1	LOW	LOW	0	———	———	———	———
2.93		0	.98219	589.8	.00052	.000141	90	———	602.5	LOW	LOW
		45	.98552	589.8	.00031	.000084	45	———	593.1	LOW	LOW
		90	———	593.8	LOW	LOW	0	.96818	579.1	.00036	.000098
4.36		0	.99109	594.8	.00047	.000127	90	———	605.8	LOW	LOW
		45	.98441	590.5	.00048	.000130	45	.97767	591.8	.00113	.000306
		90	———	597.1	LOW	LOW	0	.96707	587.8	.00157	.000426
5.78		0	.98107	589.8	.00064	.000173	90	.99441	594.8	.00055	.000149
		45	.98385	590.8	.00057	.000154	45	.94865	581.1	.00247	.000670
		90	———	591.5	LOW	LOW	0	.95814	587.5	.00240	.000651
7.13		0	.96549	582.5	.00087	.000235	90	.93470	568.5	.00178	.000483
		45	.97495	586.8	.00078	.000211	45	.93302	575.8	.00298	.000808
		90	.94545	575.1	.00161	.000435	0	.94195	583.5	.00324	.000879
8.49		0	.96159	588.1	.00144	.000389	90	.91181	562.1	.00291	.000789
		45	.94879	572.8	.00086	.000233	45	.94753	589.5	.00390	.001058
		90	.91095	561.5	.00267	.000722	0	.95032	598.1	.00438	.001188
9.27		0	.95770	588.1	.00141	.000381	90	.89730	566.5	.00450	.001220
		45	.91985	556.8	.00120	.000324	45	.92242	594.5	.00698	.001893
		90	.89425	563.5	.00424	.001147	0	.92856	602.1	.00713	.001933
10.84		0	.94712	593.5	.00316	.000855	90	.89953	563.8	.00376	.001020
		45	.88479	543.1	.00217	.000587	45	.92242	588.1	.00612	.001660
		90	.88924	560.5	.00404	.001092	0	.92744	591.8	.00560	.001519
11.30		0	.93432	584.1	.00369	.000998	90	.90233	555.8	.00262	.000710
		45	.90649	556.8	.00208	.000562	45	.93972	594.8	.00468	.001269
		90	.88980	550.8	.00265	.000717	0	.91405	571.1	.00396	.001074
11.59	1.90	0	.93321	579.1	.00312	.000844	90	.93414	564.8	.00119	.000323
		45	.91095	557.1	.00184	.000498	45	.93637	571.5	.00176	.000477
		90	.92319	560.5	.00125	.000338	0	.95032	574.1	.00097	.000263
12.32		0	.93710	596.1	.00533	.001441	90	.92800	569.8	.00237	.000643
		45	.92931	571.5	.00225	.000608	45	.95144	589.5	.00295	.000800
		90	.92597	571.5	.00267	.000722	0	.94363	595.5	.00461	.001250
13.82		0	.92987	595.8	.00605	.001636	90	.90512	557.8	.00282	.000765
		45	.91985	576.8	.00398	.001076	45	.90233	571.5	.00508	.001378
		90	.91428	564.8	.00292	.000790	0	.90846	581.1	.00603	.001635

[a]Radius is listed only for hemispherical heat shield and the step between parachute and radar canisters.

[b]Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leq h \leq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE V.- HEAT-TRANSFER MEASUREMENTS ON REENTRY CONFIGURATION - Continued

(a) M = 3.50 - Concluded

		$\alpha = 15^{\circ}$					$\alpha = -15^{\circ}$				
x, in.	r, in. (a)	Leeward (T_t = 719.2°)					Windward (T_t = 717.2°)				
		ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-1.28	.53	0	.99499	635.8	.00685	.001852	0	.99720	635.8	.00699	.001896
-.98	2.66	0	.98998	630.1	.00647	.001749	90	.99664	634.5	.00621	.001685
		45	.99499	633.5	.00630	.001703	45	1.00167	639.8	.00706	.001915
		90	.99499	650.1	.00640	.001730	0	1.00000	642.8	.00777	.002108
-.62	3.86	0	.98331	624.1	.00569	.001538	90	.98936	629.1	.00605	.001641
		45	.98442	626.1	.00587	.001587	45	.99496	637.5	.00711	.001929
		90	.98887	632.1	.00626	.001692	0	.99720	641.5	.00752	.002040
-.11	5.05	0	.97608	617.1	.00459	.001241	90	.97032	617.5	.00582	.001579
		45	.96662	613.8	.00523	.001414	45	.97592	627.5	.00697	.001891
		90	.96996	619.8	.00606	.001638	0	.98880	644.1	.00716	.001942
.45		0	.97886	586.8	.00048	.000130	90	.98432	584.5	.00038	.000103
		45	.97941	586.1	.00037	.000100	45	——	583.1	LOW	LOW
		90	.98108	587.1	.00032	.000087	0	——	581.1	LOW	LOW
1.69		0	1.00389	601.5	.00039	.000105	90	——	597.5	LOW	LOW
		45	——	600.5	LOW	LOW	45	——	——	——	——
		90	——	600.1	LOW	LOW	0	.97928	580.8	.00044	.000119
2.93		0	.99610	596.5	.00039	.000105	90	——	596.5	LOW	LOW
		45	——	602.8	LOW	LOW	45	.96528	578.1	.00095	.000258
		90	——	598.8	LOW	LOW	0	.95856	580.1	.00130	.000353
4.36		0	1.00055	599.1	.00036	.000097	90	——	594.5	LOW	LOW
		45	——	600.8	LOW	LOW	45	.95408	581.8	.00191	.000518
		90	——	592.1	LOW	LOW	0	.96136	587.8	.00197	.000534
5.78		0	.98831	592.5	.00047	.000127	90	.95352	572.5	.00146	.000396
		45	——	597.1	LOW	LOW	45	.94904	580.5	.00254	.000689
		90	.95049	573.8	.00105	.000284	0	.95800	586.8	.00247	.000670
7.13		0	.96662	581.8	.00081	.000219	90	.92440	560.1	.00195	.000529
		45	——	587.8	LOW	LOW	45	.95016	582.5	.00291	.000789
		90	.92323	563.5	.00184	.000497	0	.95072	585.5	.00322	.000873
8.49		0	.96217	582.8	.00109	.000295	90	.93224	565.5	.00213	.000578
		45	.95438	572.5	.00061	.000165	45	.95576	589.8	.00376	.001020
		90	.92935	567.8	.00202	.000546	0	.95632	599.1	.00483	.001310
9.27		0	.96106	586.8	.00146	.000395	90	.91488	567.8	.00354	.000960
		45	.93269	563.5	.00104	.000281	45	.92832	593.1	.00710	.001926
		90	.91378	571.5	.00395	.001068	0	.93560	615.5	.00725	.001967
10.84		0	.93213	578.5	.00317	.000857	90	.91432	560.1	.00274	.000743
		45	.92546	559.8	.00116	.000314	45	.92832	586.5	.00612	.001660
		90	.90933	560.5	.00268	.000724	0	.93504	593.1	.00588	.001595
11.30		0	.91266	567.8	.00283	.000765	90	.92048	557.8	.00192	.000521
		45	.94048	568.1	.00099	.000268	45	.94680	593.8	.00483	.001310
		90	.91211	555.5	.00175	.000473	0	.92160	571.8	.00403	.001093
11.59	1.90	0	.91878	556.5	.00120	.000324	90	.96024	572.8	.00062	.000168
		45	.92546	558.1	.00083	.000224	45	.94680	571.8	.00145	.000393
		90	.94938	569.8	.00057	.000154	0	.95352	575.1	.00110	.000298
12.32		0	.91044	579.5	.00440	.001189	90	.94792	569.8	.00134	.000363
		45	.92379	561.8	.00153	.000414	45	.95744	589.5	.00310	.000841
		90	.94548	572.1	.00130	.000351	0	.93784	600.5	.00498	.001351
13.82		0	.90988	581.1	.00492	.001330	90	.92384	563.5	.00231	.000627
		45	.91767	564.8	.00254	.000687	45	.90928	569.8	.00487	.001321
		90	.92212	565.1	.00229	.000619	0	.91376	580.1	.00609	.001652

[a]Radius is listed only for hemispherical heat shield and the step between parachute and radar canisters.
[b]Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leqq h \leqq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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L-1022

TABLE V.- HEAT-TRANSFER MEASUREMENTS ON REENTRY CONFIGURATION - Continued

(b) M = 4.44

		$\alpha = 0^{\circ}$					$\alpha = 0^{\circ}$				
		Leeward (T_t = 687.8°)					Windward (T_t = 678.5°)				
x, in.	r, in. (a)	ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-1.28	.53	0	1.00055	638.8	.00675	.002553	0	.99944	632.8	.00681	.002577
-.98	2.66	0	.99889	637.1	.00677	.002561	90	1.00000	632.5	.00632	.002392
		45	——	——	——	——	45	1.00000	631.8	.00638	.002414
		90	1.00000	637.8	.00642	.002429	0	.99833	631.1	.00672	.002543
-.62	3.86	0	.99336	632.8	.00630	.002383	90	.99166	626.5	.00603	.002282
		45	.99391	633.1	.00620	.002345	45	.99277	627.1	.00635	.002403
		90	.99336	632.5	.00587	.002221	0	.99277	627.1	.00607	.002297
-.11	5.05	0	.98507	625.5	.00520	.001967	90	.97109	616.1	.00572	.002165
		45	.97180	618.1	.00557	.002107	45	.97053	612.5	.00556	.002104
		90	.97180	617.8	.00553	.002092	0	.98498	620.8	.00511	.001934
.45		0	.97235	584.5	.00039	.000148	90	.97720	582.8	.00038	.000144
		45	.96738	580.8	.00041	.000155	45	.97275	579.1	.00037	.000140
		90	.97125	583.8	.00040	.000151	0	.97498	581.8	.00034	.000129
4.36		0	——	597.1	LOW	LOW	90	——	——	——	——
		45	——	593.5	LOW	LOW	45	——	——	——	——
		90	——	592.8	LOW	LOW	0	——	——	——	——
5.78		0	——	596.5	LOW	LOW	90	——	594.1	LOW	LOW
		45	——	596.1	LOW	LOW	45	——	595.5	LOW	LOW
		90	——	593.1	LOW	LOW	0	——	595.1	LOW	LOW
7.13		0	1.00939	607.5	.00051	.000193	90	1.01000	603.1	.00055	.000208
		45	1.01105	609.8	.00046	.000174	45	1.02112	608.5	.00045	.000170
		90	.99944	603.5	.00051	.000193	0	1.01723	606.1	.00044	.000167
8.49		0	1.00884	613.1	.00172	.000651	90	.99555	602.5	.00187	.000708
		45	1.01271	617.8	.00169	.000639	45	1.01501	612.5	.00154	.000583
		90	.99336	606.1	.00193	.000730	0	1.01000	608.8	.00155	.000587
9.27		0	.95134	591.5	.00369	.001396	90	.93662	584.5	.00417	.001578
		45	.94471	590.1	.00429	.001623	45	.94440	585.5	.00426	.001612
		90	.93752	586.5	.00394	.001490	0	.94996	586.1	.00352	.001332
10.84		0	.90988	572.1	.00427	.001615	90	.90548	564.8	.00403	.001525
		45	.91098	576.1	.00512	.001937	45	.90993	570.8	.00524	.001983
		90	.90711	570.5	.00400	.001513	0	.90882	566.8	.00390	.001476
11.30		0	.90214	561.1	.00311	.001176	90	.90493	556.8	.00279	.001056
		45	.92480	582.1	.00383	.001449	45	.92383	576.1	.00393	.001487
		90	.90601	562.1	.00268	.001014	0	.90326	556.8	.00283	.001071
11.59	1.90	0	.93807	570.1	.00089	.000337	90	.93884	566.1	.00107	.000405
		45	.92702	567.5	.00162	.000613	45	.92717	562.5	.00155	.000587
		90	.93918	571.5	.00110	.000416	0	.93439	563.5	.00090	.000341
12.32		0	.93144	584.1	.00343	.001298	90	.93384	580.8	.00374	.001415
		45	.93642	583.1	.00271	.001025	45	.93662	577.8	.00282	.001067
		90	.93365	586.5	.00380	.001437	0	.92772	577.5	.00323	.001222
13.82		0	.91209	577.5	.00505	.001910	90	.91382	574.5	.00539	.002040
		45	.90822	572.8	.00464	.001755	45	.90660	567.1	.00475	.001798
		90	.91596	580.1	.00529	.002001	0	.90882	570.8	.00505	.001911

[a] Radius is listed only for hemispherical heat shield and the step between parachute and radar canisters.

[b] Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leq h \leq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE V.- HEAT-TRANSFER MEASUREMENTS ON REENTRY CONFIGURATION - Continued

(b) M = 4.44 - Continued

x, in.	r, in. (a)	α = 5° Leeward (T_t = 685.5°) ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	α = -5° Windward (T_t = 680.5°) ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-1.28	.53	0	.99944	631.1	.00637	.002406	0	1.00055	637.1	.00656	.002469
-.98	2.66	0	.99612	632.8	.00631	.002383	90	1.00055	633.5	.00631	.002375
		45	.99778	634.5	.00633	.002391	45	1.00167	633.5	.00668	.002514
		90	.99889	630.8	.00608	.002296	0	1.00000	633.5	.00692	.002604
-.62	3.86	0	.98947	628.1	.00587	.002217	90	.99275	628.1	.00585	.002202
		45	.99168	624.5	.00559	.002111	45	.99498	629.5	.00652	.002454
		90	.99335	626.5	.00563	.002126	0	.99498	630.1	.00644	.002424
-.11	5.05	0	.98503	618.5	.00468	.001767	90	.97324	617.5	.00550	.002070
		45	.97229	610.8	.00485	.001832	45	.97379	615.5	.00580	.002183
		90	.97284	612.8	.00530	.002002	0	.98773	627.5	.00552	.002078
.45		0	1.00055	601.5	.00053	.000200	90	.99052	592.8	.00046	.000173
		45	.99279	595.8	.00046	.000174	45	.97881	584.1	.00042	.000158
		90	.99113	595.1	.00042	.000159	0	.97491	582.5	.00044	.000166
1.69		0	1.03601	622.1	.00031	.000117	90	—	608.8	LOW	LOW
		45	—	614.8	LOW	LOW	45	—	—	—	—
		90	—	611.1	LOW	LOW	0	—	—	—	—
2.93		0	1.02770	617.1	.00031	.000117	90	—	—	—	—
		45	—	619.5	LOW	LOW	45	—	—	—	—
		90	—	614.5	LOW	LOW	0	—	—	—	—
4.36		0	1.03989	623.1	.00030	.000113	90	—	—	—	—
		45	—	622.8	LOW	LOW	45	—	585.8	LOW	LOW
		90	—	614.8	LOW	LOW	0	—	580.5	LOW	LOW
5.78		0	1.03878	622.1	.00037	.000140	90	—	605.5	LOW	LOW
		45	1.04488	626.8	.00030	.000113	45	.98494	591.1	.00058	.000218
		90	—	614.8	LOW	LOW	0	.97101	583.1	.00066	.000248
7.13		0	1.03102	618.8	.00056	.000211	90	1.01282	608.5	.00083	.000312
		45	1.04488	627.1	.00039	.000147	45	.99275	598.5	.00112	.000422
		90	1.01883	613.1	.00073	.000276	0	.97993	590.1	.00103	.000388
8.49		0	1.01496	613.8	.00086	.000325	90	.95986	584.1	.00216	.000813
		45	1.01329	611.8	.00085	.000321	45	.96933	590.8	.00227	.000854
		90	.96342	585.5	.00184	.000695	0	.96822	592.5	.00258	.000971
9.27		0	1.00609	607.5	.00079	.000298	90	.91135	569.5	.00354	.001332
		45	.97617	591.5	.00153	.000578	45	.92250	580.1	.00574	.002160
		90	.91577	567.1	.00303	.001144	0	.92529	584.1	.00463	.001743
10.84		0	.98171	599.8	.00202	.000763	90	.89128	559.1	.00389	.001464
		45	.91134	562.5	.00310	.001171	45	.91526	574.1	.00557	.002096
		90	.88696	555.1	.00370	.001397	0	.91972	573.5	.00419	.001577
11.30		0	.97451	595.8	.00216	.000816	90	.89128	548.8	.00272	.001024
		45	.92021	570.5	.00273	.001031	45	.92808	578.1	.00369	.001389
		90	.88807	546.1	.00238	.000899	0	.91637	562.5	.00292	.001099
11.59	1.90	0	.96398	587.1	.00176	.000665	90	.92696	559.1	.00110	.000414
		45	.92907	565.8	.00177	.000668	45	.92641	560.8	.00150	.000565
		90	.92796	561.1	.00102	.000385	0	.94313	565.5	.00067	.000252
12.32		0	.96564	599.1	.00339	.001280	90	.91749	566.5	.00277	.001043
		45	.93849	575.1	.00217	.000820	45	.94202	576.8	.00233	.000877
		90	.92076	564.8	.00212	.000801	0	.95205	588.5	.00255	.000960
13.82		0	.95068	596.8	.00423	.001598	90	.90020	560.1	.00398	.001498
		45	.90968	567.1	.00387	.001462	45	.89965	561.5	.00435	.001637
		90	.90414	558.5	.00305	.001152	0	.90243	567.8	.00462	.001739

[a] Radius is listed only for hemispherical heat shield and the step between parachute and radar canisters.
[b] Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leq h \leq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE V.- HEAT-TRANSFER MEASUREMENTS ON REENTRY CONFIGURATION - Continued

(b) M = 4.44 - Continued

		$\alpha = 10^{\circ}$					$\alpha = -10^{\circ}$				
x, in.	r, in. (a)	Leeward ($T_t = 687.8^{\circ}$)					Windward ($T_t = 683.5^{\circ}$)				
		ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-1.28	.53	0	.99500	633.5	.00623	.002364	0	.99611	633.5	.00734	.002775
-.98	2.66	0	.99056	629.5	.00591	.002243	90	.99500	639.5	.00680	.002571
		45	.99500	632.1	.00571	.002167	45	.99777	634.5	.00715	.002704
		90	.99556	634.8	.00605	.002296	0	.99722	634.5	.00815	.003082
-.62	3.86	0	.98446	624.5	.00532	.002019	90	.98778	627.5	.00649	.002454
		45	.98668	626.1	.00539	.002046	45	.99222	631.5	.00739	.002794
		90	.99001	630.5	.00561	.002129	0	.99278	632.8	.00757	.002862
-.11	5.05	0	.98058	619.1	.00421	.001598	90	.96780	613.8	.00656	.002480
		45	.96838	615.1	.00447	.001696	45	.97002	621.1	.00716	.002707
		90	.97004	616.5	.00513	.001947	0	.98501	630.5	.00680	.002571
.45		0	.99667	599.5	.00050	.000190	90	.98501	591.8	.00047	.000178
		45	.99001	594.1	.00055	.000209	45	.97224	582.1	.00048	.000181
		90	.99112	595.5	.00050	.000190	0	.96891	580.5	.00038	.000144
1.69		0	—	621.1	LOW	LOW	90	—	606.1	LOW	LOW
		45	—	614.1	LOW	LOW	45	—	—	—	—
		90	—	—	—	—	0	—	586.8	LOW	LOW
2.93		0	—	618.5	LOW	LOW	90	—	604.1	LOW	LOW
		45	—	619.8	LOW	LOW	45	—	579.5	LOW	LOW
		90	—	—	—	—	0	.96059	575.8	.00035	.000132
4.36		0	—	625.8	LOW	LOW	90	—	595.1	LOW	LOW
		45	—	621.5	LOW	LOW	45	.95726	577.8	.00073	.000276
		90	—	604.8	LOW	LOW	0	.96003	579.5	.00074	.000280
5.78		0	—	621.1	LOW	LOW	90	.97890	590.1	.00056	.000212
		45	—	618.5	LOW	LOW	45	.95948	581.8	.00138	.000522
		90	—	594.5	LOW	LOW	0	.95726	580.1	.00112	.000423
7.13		0	1.01553	609.5	.00041	.000156	90	.96170	580.5	.00127	.000480
		45	—	609.8	LOW	LOW	45	.95726	581.8	.00162	.000613
		90	.96061	583.8	.00120	.000455	0	.95837	582.1	.00142	.000537
8.49		0	.99278	599.1	.00062	.000235	90	.93561	571.5	.00210	.000794
		45	.96782	582.5	.00061	.000232	45	.96003	589.5	.00266	.001006
		90	.93731	572.5	.00176	.000668	0	.96059	592.1	.00305	.001153
9.27		0	.98113	593.1	.00068	.000258	90	.91119	571.8	.00362	.001369
		45	.93010	563.1	.00101	.000383	45	.92451	586.8	.00620	.002344
		90	.91568	572.8	.00304	.001154	0	.92562	586.5	.00666	.002518
10.84		0	.95506	588.5	.00189	.000717	90	.90342	561.8	.00314	.001187
		45	.90348	553.8	.00175	.000664	45	.92007	577.1	.00519	.001962
		90	.90625	560.8	.00248	.000941	0	.92340	578.5	.00487	.001841
11.30		0	.94674	583.1	.00207	.000786	90	.90509	554.8	.00216	.000817
		45	.92012	562.1	.00183	.000695	45	.93506	582.1	.00414	.001565
		90	.90680	556.1	.00174	.000660	0	.91785	567.8	.00314	.001187
11.59	1.90	0	.93565	571.8	.00163	.000619	90	.94116	567.8	.00078	.000295
		45	.92178	558.8	.00119	.000452	45	.93839	568.8	.00133	.000503
		90	.93898	566.8	.00063	.000239	0	.94893	571.5	.00072	.000272
12.32		0	.93288	585.5	.00325	.001233	90	.94227	572.5	.00152	.000575
		45	.93898	572.1	.00150	.000569	45	.96003	586.1	.00188	.000711
		90	.94619	574.8	.00124	.000471	0	.95337	592.1	.00301	.001138
13.82		0	.92123	583.1	.00419	.001590	90	.90897	556.8	.00221	.000836
		45	.92677	574.1	.00266	.001010	45	.90287	563.5	.00415	.001569
		90	.92400	566.1	.00197	.000748	0	.90231	569.1	.00504	.001906

[a] Radius is listed only for hemispherical heat shield and the step between parachute and radar canisters.

[b] Accuracy depends on magnitude: h > 0.015, accuracy 10 percent; $0.001 \leq h \leq 0.015$, accuracy 15 percent; h < 0.001, accuracy 20 percent. (h measured in Btu/sq ft-sec-$^{\circ}$R.)

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TABLE V.- HEAT-TRANSFER MEASUREMENTS ON REENTRY CONFIGURATION - Concluded

(b) M = 4.44 - Concluded

x, in.	r, in. (a)	α = 15° Leeward (T_t = 687.8°)					α = -15° Windward (T_t = 680.8°)				
		ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-1.28	.53	0	.99554	629.1	.00605	.002289	0	.99610	628.1	.00631	.002383
-.98	2.66	0	.98942	623.5	.00569	.002152	90	.99610	628.1	.00576	.002175
		45	.99387	626.1	.00555	.002099	45	1.00000	631.5	.00630	.002379
		90	.99610	629.5	.00586	.002217	0	.99944	639.8	.00672	.002537
-.62	3.86	0	.98163	616.5	.00490	.001854	90	.98886	629.8	.00535	.002020
		45	.98497	619.1	.00498	.001884	45	.99387	628.8	.00632	.002386
		90	.98886	624.5	.00550	.002081	0	.99610	631.1	.00666	.002515
-.11	5.05	0	.97885	611.1	.00371	.001403	90	.96937	609.8	.00503	.001899
		45	.96660	605.5	.00418	.001581	45	.97327	615.5	.00581	.002194
		90	.96938	611.1	.00501	.001895	0	.98830	626.1	.00593	.002239
.45		0	.99165	593.8	.00044	.000166	90	.98663	589.5	.00038	.000143
		45	.98608	589.5	.00041	.000155	45	.96491	573.8	.00033	.000125
		90	.98831	591.5	.00040	.000151	0	.96380	574.8	.00046	.000174
1.69		0	—	615.5	LOW	LOW	90	—	—	—	—
		45	—	608.5	LOW	LOW	45	—	573.8	LOW	LOW
		90	—	605.8	LOW	LOW	0	.97327	581.1	.00046	.000174
2.93		0	—	611.1	LOW	LOW	90	—	—	—	—
		45	—	612.5	LOW	LOW	45	.95879	572.1	.00049	.000185
		90	—	601.1	LOW	LOW	0	.95767	576.1	.00090	.000340
4.36		0	—	613.1	LOW	LOW	90	—	575.8	LOW	LOW
		45	—	609.5	LOW	LOW	45	.95266	572.1	.00083	.000313
		90	—	584.8	LOW	LOW	0	.95934	578.5	.00105	.000396
5.78		0	1.01001	603.5	.00044	.000166	90	.94821	570.1	.00088	.000332
		45	—	602.1	LOW	LOW	45	.95377	576.1	.00122	.000461
		90	.94823	571.1	.00082	.000310	0	.95545	577.8	.00118	.000446
7.13		0	.99053	592.8	.00054	.000204	90	.94988	570.8	.00087	.000329
		45	—	594.5	LOW	LOW	45	.95934	580.1	.00144	.000544
		90	.94378	568.8	.00099	.000374	0	.95656	581.1	.00150	.000566
8.49		0	.97996	588.5	.00061	.000231	90	.94876	572.1	.00123	.000464
		45	.97551	582.8	.00031	.000117	45	.96268	587.5	.00233	.000880
		90	.94211	570.8	.00116	.000439	0	.96157	591.5	.00277	.001046
9.27		0	.97662	588.1	.00077	.000291	90	.92872	569.8	.00251	.000948
		45	.95157	571.5	.00069	.000261	45	.92816	582.8	.00559	.002111
		90	.92375	573.8	.00227	.000859	0	.92983	587.5	.00571	.002156
10.84		0	.95046	580.1	.00168	.000636	90	.91368	557.1	.00196	.000740
		45	.93766	563.8	.00078	.000295	45	.92426	575.5	.00441	.001665
		90	.90872	554.5	.00190	.000719	0	.92872	578.8	.00417	.001575
11.30		0	.93766	570.8	.00166	.000628	90	.91702	555.1	.00142	.000536
		45	.94935	569.5	.00047	.000178	45	.93818	582.1	.00308	.001163
		90	.91206	551.8	.00130	.000492	0	.92426	567.5	.00277	.001046
11.59	1.90	0	.94378	565.5	.00045	.000170	90	.95600	571.1	.00039	.000147
		45	.94044	562.5	.00040	.000151	45	.93985	566.5	.00118	.000446
		90	—	569.8	LOW	LOW	0	.94431	569.5	.00083	.000313
12.32		0	.91373	561.1	.00206	.000779	90	.95155	573.5	.00085	.000321
		45	.93265	561.1	.00078	.000295	45	.95656	582.8	.00180	.000680
		90	.95213	572.1	.00081	.000306	0	.94041	581.8	.00322	.001216
13.82		0	.89926	556.1	.00278	.001052	90	.92649	560.8	.00148	.000559
		45	.92041	559.1	.00140	.000530	45	.91201	563.5	.00335	.001265
		90	.92709	562.5	.00146	.000552	0	.90755	565.5	.00429	.001620

[a]Radius is listed only for hemispherical heat shield and the step between parachute and radar canisters.
[b]Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leq h \leq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VI.- HEAT-TRANSFER MEASUREMENTS ON EXIT CONFIGURATION

(a) M = 3.50

x, in.	r, in. (a)	Leeward ($\alpha = 0^{\circ}$) (T_t = 715.8°)					Windward ($\alpha = 0^{\circ}$) (T_t = 721.8°)				
		ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	.96608	586.5	.00168	.000286	90	.96748	595.1	.00185	.000316
		45	.97553	593.1	.00167	.000284	45	.97906	602.1	.00187	.000320
		90	.96275	585.8	.00177	.000301	0	.97410	598.8	.00180	.000308
-.62	3.86	0	.96553	583.8	.00128	.000218	90	.97189	591.8	.00113	.000193
		45	.96886	586.1	.00126	.000214	45	.97244	596.5	.00163	.000279
		90	.96775	583.8	.00104	.000177	0	.97189	593.8	.00138	.000236
-.11	5.05	0	.95385	582.5	.00242	.000412	90	.95261	591.8	.00243	.000416
		45	.94885	583.8	.00252	.000429	45	—	—	—	—
		90	.95274	585.1	.00235	.000400	0	.95867	599.1	.00308	.000527
.45		0	.94774	624.8	.01152	.001959	90	.95205	641.8	.01214	.002076
		45	.95385	636.1	.01218	.002071	45	—	—	—	—
		90	.95385	634.8	.01174	.001996	0	.94875	634.1	.01218	.002083
1.69		0	.94885	621.1	.01148	.001952	90	.94158	622.8	.01164	.001991
		45	.94440	618.1	.01227	.002087	45	.94379	625.1	.01248	.002134
		90	.94384	615.8	.01118	.001901	0	.95040	629.8	.01180	.002018
2.93		0	.93940	614.5	.01147	.001951	90	.93828	619.1	.01152	.001970
		45	.94162	615.8	.01173	.001995	45	.93993	622.8	.01215	.002078
		90	.94162	613.1	.01110	.001888	0	.93938	622.5	.01178	.002015
4.36		0	.94162	615.8	.01143	.001944	90	.93497	617.5	.01156	.001977
		45	.94440	617.1	.01138	.001935	45	.94324	624.5	.01189	.002034
		90	.93662	610.8	.01128	.001918	0	.94103	623.8	.01194	.002042
5.78		0	.93439	611.5	.01167	.001985	90	.93001	615.5	.01203	.002057
		45	.93439	610.8	.01134	.001928	45	.93277	617.8	.01180	.002018
		90	.93328	609.5	.01153	.001961	0	.93277	618.8	.01226	.002097
7.13		0	.93439	613.8	.01233	.002097	90	.92450	613.8	.01269	.002170
		45	.93328	610.5	.01161	.001974	45	.93167	617.8	.01222	.002090
		90	.92717	607.1	.01208	.002054	0	.93222	620.8	.01305	.002232
8.49		0	.93551	621.8	.01135	.001930	90	.93607	627.5	.01122	.001919
		45	.93717	627.5	.01243	.002114	45	.93663	626.8	.01329	.002273
		90	.93829	620.8	.01081	.001838	0	.93442	621.5	.01227	.002099
9.27		0	.93829	592.1	.00542	.000922	90	.92946	588.8	.00546	.000934
		45	.92828	587.1	.00641	.001090	45	.92726	593.5	.00644	.001101
		90	.93106	582.8	.00442	.000752	0	.93663	597.5	.00532	.000910
10.84		0	.92272	600.5	.01054	.001792	90	.91018	584.8	.00717	.001226
		45	.92439	594.5	.00904	.001537	45	.92671	606.1	.00949	.001623
		90	.91549	589.5	.00714	.001214	0	.92065	607.1	.01084	.001854
11.30		0	.96108	655.5	.01620	.002755	90	—	—	—	—
		45	.92327	610.8	.01377	.002342	45	.92781	624.5	.01508	.002579
		90	—	—	—	—	0	.95812	662.1	.01701	.002909
11.59	1.90	0	.97776	677.5	.02155	.003665	90	.97244	671.1	.02183	.003734
		45	.96441	665.5	.02039	.003467	45	.96252	663.8	.02181	.003730
		90	.97553	672.8	.01987	.003379	0	.97685	685.1	.02224	.003804
12.32		0	.96775	639.5	.01318	.002241	90	.97024	646.8	.01386	.002370
		45	.97109	639.8	.01324	.002252	45	.96859	647.1	.01381	.002362
		90	.97164	639.5	.01332	.002265	0	.96473	645.8	.01367	.002338
13.82		0	.94607	587.8	.00363	.000617	90	.94654	603.1	.00548	.000937
		45	.95330	592.8	.00384	.000653	45	.95095	597.8	.00389	.000665
		90	.94940	597.8	.00540	.000918	0	.94379	592.8	.00371	.000635
15.02	1.15	0	.99277	656.1	.01269	.002158	90	.98291	664.1	.01479	.002530
		45	.96108	655.1	.01614	.002745	45	.95701	660.8	.01688	.002887
		90	.98498	658.5	.01469	.002498	0	.99008	662.5	.01318	.002254
15.12		180	.97943	684.5	.00813	.001383	180	—	—	—	—
15.51		180	.99054	706.8	.02091	.003556	180	.98897	708.5	.02232	.003817

[a]Radius is listed only for hemispherical heat shield, step between parachute and radar canisters, and exit flat face.
[b]Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leq h \leq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VI.- HEAT-TRANSFER MEASUREMENTS ON EXIT CONFIGURATION - Continued

(a) M = 3.50 - Continued

x, in.	r, in. (a)	α = 5°, Leeward (T_t = 715.8°) ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	α = -5°, Windward (T_t = 723.8°) ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	.94865	575.1	.00165	.000280	90	.95862	588.5	.00178	.000305
		45	.95479	579.1	.00155	.000263	45	.97021	596.1	.00177	.000304
		90	.94363	575.5	.00207	.000351	0	.97352	594.8	.00143	.000245
-.62	3.86	0	.94865	572.5	.00122	.000207	90	.95917	585.1	.00130	.000223
		45	.94921	572.5	.00118	.000200	45	.96579	595.5	.00205	.000352
		90	.94865	574.5	.00129	.000219	0	.97186	593.8	.00143	.000245
-.11	5.05	0	.93023	565.5	.00199	.000338	90	.94318	580.5	.00215	.000369
		45	.93135	567.5	.00262	.000445	45	.94759	600.5	.00583	.001000
		90	.93637	576.1	.00248	.000421	0	.95697	593.8	.00314	.000539
.45		0	.91070	592.8	.00952	.001616	90	.95310	629.8	.01133	.001943
		45	.94586	627.1	.01146	.001945	45	.96193	650.1	.01679	.002880
		90	.94195	632.8	.01116	.001894	0	.95752	648.5	.01536	.002635
1.69		0	.91628	590.1	.00886	.001504	90	.94924	625.1	.01104	.001894
		45	.94028	612.1	.01169	.001984	45	.95200	635.1	.01426	.002446
		90	.94251	615.1	.01101	.001869	0	.96083	646.5	.01511	.002592
2.93		0	.91125	585.5	.00860	.001460	90	.94759	623.8	.01142	.001959
		45	.93693	610.5	.01147	.001947	45	.95035	634.1	.01398	.002398
		90	.94697	614.8	.01054	.001789	0	.95200	639.8	.01501	.002575
4.36		0	.92186	591.8	.00848	.001439	90	.94428	622.5	.01162	.001993
		45	.93860	611.8	.01137	.001930	45	.95586	636.8	.01349	.002314
		90	.94809	617.5	.01110	.001884	0	.95421	641.1	.01509	.002588
5.78		0	.92856	596.1	.00852	.001446	90	.93766	619.1	.01190	.002041
		45	.92577	605.1	.01173	.001991	45	.94649	631.5	.01349	.002314
		90	.94474	618.1	.01194	.002026	0	.94593	635.1	.01505	.002581
7.13		0	.94195	604.5	.00850	.001443	90	.92883	616.1	.01264	.002168
		45	.92465	606.1	.01224	.002077	45	.94538	631.8	.01397	.002396
		90	.93637	618.5	.01365	.002317	0	.94428	636.5	.01577	.002705
8.49		0	.93358	602.5	.00822	.001395	90	.94207	630.5	.01109	.001902
		45	.92465	617.5	.01207	.002049	45	.94814	646.5	.01434	.002460
		90	.94642	624.5	.01230	.002088	0	.94593	642.1	.01340	.002298
9.27		0	.93023	581.1	.00426	.000723	90	.93656	591.1	.00416	.000714
		45	.90902	572.5	.00604	.001025	45	.93987	605.8	.00753	.001292
		90	.93470	584.8	.00435	.000738	0	.95035	612.5	.00669	.001147
10.84		0	.93358	599.5	.00821	.001393	90	.91339	592.5	.00677	.001161
		45	.90400	579.5	.00871	.001478	45	.93987	620.5	.01154	.001979
		90	.91349	583.5	.00759	.001288	0	.93269	621.1	.01278	.002192
11.30		0	.96483	646.1	.01564	.002654	90	———	———	———	———
		45	.90456	592.1	.01175	.001994	45	.93325	630.8	.01663	.002852
		90	———	———	———	———	0	.96910	669.1	.01670	.002864
11.59	1.90	0	.97544	639.1	.01112	.001887	90	.96083	669.8	.02033	.003487
		45	.94195	630.5	.01565	.002656	45	.96028	674.8	.02395	.004108
		90	.96260	661.1	.02342	.003975	0	.97572	688.1	.02509	.004304
12.32		0	.95758	618.1	.00875	.001485	90	.94924	631.1	.01332	.002285
		45	.92856	602.1	.01017	.001726	45	.96524	645.8	.01421	.002437
		90	.93581	623.1	.01515	.002571	0	.96690	648.1	.01399	.002400
13.82		0	.94642	600.1	.00616	.001045	90	.94428	606.1	.00620	.001063
		45	.92856	585.5	.00591	.001003	45	.95697	614.5	.00607	.001041
		90	.91851	593.1	.00888	.001507	0	.94979	617.1	.00760	.001304
15.02	1.15	0	.99051	668.1	.01795	.003047	90	.98234	654.1	.01164	.001997
		45	.96260	647.8	.01658	.002814	45	.96303	666.1	.01738	.002981
		90	.98381	677.1	.02297	.003899	0	.99282	663.1	.01254	.002151
15.12		180	.97488	682.8	.00726	.001232	180	———	———	———	———
15.51		180	.98995	704.5	.02459	.004173	180	.98841	712.8	.02073	.003556

[a]Radius is listed only for hemispherical heat shield, step between parachute and radar canisters, and exit flat face.
[b]Accuracy depends on magnitude: h > 0.015, accuracy 10 percent; 0.001 ≤ h ≤ 0.015, accuracy 15 percent; h < 0.001, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VI. - HEAT-TRANSFER MEASUREMENTS ON EXIT CONFIGURATION - Continued

(a) M = 3.50 - Continued

		$\alpha = 10^{0}$					$\alpha = -10^{0}$				
		Leeward (T_t = 721.2°)					Windward (T_t = 723.2°)				
x, in.	r, in. (a)	ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	.95104	574.5	.00110	.000189	90	.94916	578.1	.00139	.000238
		45	.95383	576.8	.00120	.000206	45	.95690	583.5	.00137	.000234
		90	.94548	574.5	.00151	.000259	0	.96905	587.1	.00099	.000169
-.62	3.86	0	.95049	573.5	.00106	.000182	90	.94640	575.5	.00125	.000214
		45	.94715	576.5	.00166	.000285	45	.95579	585.8	.00179	.000306
		90	.95049	575.5	.00116	.000199	0	.96905	590.8	.00113	.000193
-.11	5.05	0	.93769	570.1	.00174	.000299	90	.92871	573.1	.00207	.000354
		45	.92879	571.8	.00237	.000407	45	.93811	594.8	.00607	.001037
		90	.93825	581.1	.00243	.000417	0	.95026	591.1	.00362	.000619
.45		0	.92768	598.1	.00772	.001326	90	.94142	618.1	.01072	.001832
		45	.93046	601.8	.00863	.001482	45	.96132	651.5	.01869	.003194
		90	.95049	621.8	.01112	.001909	0	.95413	655.1	.02033	.003475
1.69		0	.93269	595.8	.00728	.001250	90	.94308	618.8	.01094	.001870
		45	.92101	593.5	.00900	.001545	45	.95579	641.5	.01641	.002805
		90	.94938	621.1	.01123	.001928	0	.95855	653.8	.01935	.003307
2.93		0	.92713	591.5	.00716	.001229	90	.94198	617.5	.01101	.001882
		45	.92156	594.1	.00865	.001485	45	.95413	641.5	.01625	.002777
		90	.94882	619.1	.01115	.001915	0	.95358	648.8	.01869	.003194
4.36		0	.93491	597.1	.00729	.001252	90	.94087	617.5	.01128	.001928
		45	.92935	599.5	.00881	.001513	45	.95911	644.1	.01600	.002735
		90	.94659	619.1	.01142	.001961	0	.96021	652.8	.01858	.003176
5.78		0	.93825	599.5	.00758	.001302	90	.93700	615.5	.01128	.001928
		45	.92879	603.8	.00979	.001681	45	.95082	638.5	.01578	.002697
		90	.94437	619.1	.01184	.002033	0	.95303	647.1	.01853	.003167
7.13		0	.94381	602.8	.00747	.001283	90	.92650	610.1	.01158	.001979
		45	.93881	615.1	.01132	.001944	45	.94971	638.5	.01610	.002752
		90	.93324	612.5	.01184	.002033	0	.95137	647.5	.01909	.003263
8.49		0	.93158	600.8	.00817	.001403	90	.92595	607.5	.00991	.001694
		45	.92935	608.8	.01086	.001865	45	.94861	640.8	.01602	.002738
		90	.92101	608.1	.00970	.001666	0	.95082	643.1	.01648	.002817
9.27		0	.92101	577.5	.00423	.000726	90	.93258	586.8	.00385	.000658
		45	.91266	570.5	.00457	.000785	45	.93921	609.8	.00876	.001497
		90	.91489	572.8	.00406	.000697	0	.95468	621.8	.00852	.001456
10.84		0	.93046	597.1	.00748	.001284	90	.91048	589.5	.00671	.001147
		45	.89820	573.5	.00738	.001267	45	.93700	622.8	.01406	.002403
		90	.90710	579.1	.00755	.001296	0	.93866	630.5	.01526	.002608
11.30		0	.96328	646.5	.01589	.002728	90	—	—	—	—
		45	.89208	580.1	.01002	.001721	45	.92650	628.5	.01798	.003073
		90	—	—	—	—	0	.96905	665.5	.01942	.003319
11.59	1.90	0	.96439	631.5	.01023	.001757	90	.94750	656.8	.01934	.003305
		45	.92045	613.5	.01419	.002437	45	.95579	663.1	.02465	.004213
		90	.95828	667.5	.02119	.003639	0	.97900	688.1	.03160	.005401
12.32		0	.92601	598.1	.00811	.001393	90	.94087	620.8	.01207	.002063
		45	.90710	580.5	.00757	.001300	45	.95634	642.5	.01535	.002623
		90	.93658	621.5	.01433	.002461	0	.96353	654.8	.01736	.002967
13.82		0	.91600	576.1	.00495	.000850	90	.94363	598.1	.00484	.000827
		45	.91934	572.1	.00402	.000690	45	.95468	622.1	.00645	.001102
		90	.93491	610.5	.01022	.001755	0	.94805	614.1	.00671	.001147
15.02	1.15	0	.99221	679.5	.02116	.003633	90	.98066	649.5	.01081	.001848
		45	.96161	649.1	.01709	.002935	45	.96684	661.5	.01877	.003208
		90	.98776	700.8	.03045	.005229	0	.99226	661.5	.01251	.002138
15.12		180	.97496	680.1	.00764	.001312	180	—	—	—	—
15.51		180	.99109	705.5	.02270	.003898	180	.97789	700.8	.01966	.003360

[a]Radius is listed only for hemispherical heat shield, step between parachute and radar canisters, and exit flat face.

[b]Accuracy depends on magnitude: h > 0.015, accuracy 10 percent; 0.001 ≤ h ≤ 0.015, accuracy 15 percent; h < 0.001, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VI.- HEAT-TRANSFER MEASUREMENTS ON EXIT CONFIGURATION - Continued

(a) M = 3.50 - Continued

x, in.	r, in. (a)	$\alpha = 15^{\circ}$, Leeward (T_t = 720.8°)					$\alpha = -15^{\circ}$, Windward (T_t = 722.2°)				
		ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	.94771	577.8	.00186	.000318	90	.93804	576.8	.00141	.000241
		45	.94826	572.5	.00109	.000186	45	.94855	579.1	.00149	.000255
		90	.94604	571.8	.00116	.000198	0	.95353	580.5	.00134	.000229
-.62	3.86	0	.94548	573.1	.00155	.000265	90	.93693	569.5	.00113	.000193
		45	.94548	570.1	.00100	.000171	45	.95408	585.8	.00185	.000316
		90	.95104	573.8	.00098	.000167	0	.95795	584.8	.00156	.000267
-.11	5.05	0	.93603	568.8	.00172	.000294	90	.91923	564.1	.00209	.000357
		45	.92101	566.1	.00184	.000314	45	.93472	596.5	.00714	.001220
		90	.93046	568.5	.00221	.000378	0	.94357	602.5	.00479	.000818
.45		0	.93881	601.1	.00658	.001124	90	.92808	613.1	.01151	.001967
		45	.92824	591.1	.00660	.001127	45	.94689	654.8	.02597	.004437
		90	.93603	621.1	.01323	.002260	0	.94855	657.1	.02373	.004055
1.69		0	.94270	598.1	.00627	.001071	90	.92864	611.8	.01149	.001963
		45	.93269	593.5	.00685	.001170	45	.94191	643.1	.02073	.003542
		90	.93769	620.1	.01278	.002183	0	.95187	658.1	.02501	.004273
2.93		0	.93380	593.5	.00639	.001092	90	.93140	611.1	.01122	.001917
		45	.93213	593.8	.00678	.001158	45	.94744	645.1	.01942	.003318
		90	.94103	619.8	.01245	.002127	0	.94357	660.1	.02408	.004114
4.36		0	.93714	597.1	.00682	.001165	90	.93417	612.1	.01087	.001857
		45	.93658	598.5	.00714	.001220	45	.95961	650.1	.01804	.003082
		90	.94048	619.1	.01233	.002106	0	.94966	663.5	.02362	.004036
5.78		0	.93324	597.1	.00744	.001271	90	.93361	610.8	.01053	.001799
		45	.92268	592.1	.00740	.001264	45	.95629	648.8	.01789	.003057
		90	.93825	617.1	.01217	.002079	0	.94966	653.5	.02354	.004022
7.13		0	.93658	600.5	.00766	.001309	90	.92808	608.5	.01067	.001823
		45	.91711	588.1	.00770	.001315	45	.95298	644.5	.01726	.002949
		90	.93213	612.5	.01160	.001982	0	.95463	656.1	.02334	.003988
8.49		0	.92879	601.8	.00836	.001428	90	.91813	601.8	.00825	.001410
		45	.90933	587.1	.00797	.001361	45	.95076	643.8	.01730	.002956
		90	.92323	598.1	.00864	.001476	0	.95685	651.1	.01894	.003236
9.27		0	.91099	570.8	.00405	.000692	90	.92808	583.5	.00380	.000649
		45	.90209	558.1	.00342	.000584	45	.94523	618.5	.01023	.001748
		90	.92879	588.5	.00407	.000695	0	.96017	631.5	.01008	.001722
10.84		0	.90933	581.8	.00677	.001156	90	.90540	593.1	.00681	.001164
		45	.88819	562.8	.00605	.001033	45	.94523	629.5	.01383	.002363
		90	.91489	595.1	.00775	.001324	0	.94578	641.1	.01715	.002930
11.30		0	.95383	654.8	.01509	.002578	90	———	———	———	———
		45	.87818	568.1	.00888	.001517	45	.92808	639.8	.01853	.003166
		90	———	———	———	———	0	.97455	669.1	.01953	.003337
11.59	1.90	0	.92768	605.8	.00954	.001630	90	.92532	624.1	.01583	.002705
		45	.90488	613.1	.01335	.002280	45	.95242	660.8	.02556	.004367
		90	.93714	637.1	.01805	.003083	0	.98174	695.5	.03037	.005189
12.32		0	.89542	578.1	.00760	.001298	90	.92255	604.5	.01048	.001791
		45	.90043	577.8	.00766	.001309	45	.94966	639.5	.01543	.002636
		90	.92713	612.5	.01263	.002157	0	.96349	668.5	.01992	.003404
13.82		0	.91044	572.1	.00466	.000796	90	.94302	600.8	.00570	.000974
		45	.92490	585.1	.00563	.000962	45	.95795	631.5	.01094	.001869
		90	.94659	618.1	.01015	.001734	0	.95463	634.5	.00914	.001562
15.02	1.15	0	.99944	699.8	.02884	.004927	90	.97842	643.5	.00986	.001685
		45	.95383	651.1	.01736	.002965	45	.97068	664.1	.01895	.003238
		90	.98498	694.8	.03131	.005348	0	.99114	659.8	.01239	.002117
15.12		180	.96829	679.1	.00801	.001368	180	———	———	———	———
15.51		180	.99165	704.1	.01904	.003252	180	.96680	690.5	.01667	.002848

[a]Radius is listed only for hemispherical heat shield, step between parachute and radar canisters, and exit flat face.
[b]Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leq h \leq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VI. - HEAT-TRANSFER MEASUREMENTS ON EXIT CONFIGURATION - Continued

(a) M = 3.50 - Concluded

		$\alpha = 20^\circ$					$\alpha = -20^\circ$				
		Leeward (T_t = 723.2°)					Windward (T_t = 720.5°)				
x, in.	r, in. (a)	ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	.94888	572.5	.00084	.000144	90	.94283	572.1	.00106	.000181
		45	.94777	571.8	.00077	.000132	45	.96336	583.8	.00101	.000173
		90	.94443	569.5	.00081	.000139	0	.95781	584.5	.00159	.000272
-.62	3.86	0	.93888	568.1	.00109	.000187	90	.94061	570.5	.00108	.000185
		45	.94110	569.8	.00107	.000184	45	.96947	589.8	.00129	.000220
		90	.94777	571.8	.00079	.000136	0	.96281	585.5	.00137	.000234
-.11	5.05	0	.94276	572.8	.00151	.000259	90	.92285	574.8	.00255	.000436
		45	.91887	560.1	.00166	.000285	45	.94005	584.5	.00403	.000688
		90	.92832	567.5	.00212	.000364	0	.94782	594.5	.00509	.000870
.45		0	.94665	600.5	.00553	.000949	90	.93062	623.1	.01137	.001942
		45	.91998	580.8	.00557	.000956	45	.94283	654.1	.01922	.003284
		90	.93665	620.8	.01338	.002296	0	.95337	664.8	.01945	.003323
1.69		0	.94221	593.1	.00525	.000901	90	.92729	613.5	.01168	.001995
		45	.92498	581.1	.00527	.000904	45	.94005	651.5	.02057	.003514
		90	.93387	617.8	.01315	.002257	0	.95282	665.1	.02197	.003753
2.93		0	.93054	587.1	.00552	.000947	90	.92784	612.8	.01174	.002006
		45	.91887	576.8	.00501	.000860	45	.94671	657.1	.02061	.003521
		90	.93221	616.5	.01365	.002342	0	.94394	659.5	.02250	.003844
4.36		0	.93110	589.5	.00600	.001030	90	.92618	611.1	.01161	.001983
		45	.92554	580.5	.00502	.000861	45	.95837	662.8	.01998	.003413
		90	.93165	615.5	.01336	.002293	0	.94893	664.1	.02302	.003933
5.78		0	.91943	584.5	.00668	.001146	90	.92729	608.5	.01091	.001864
		45	.91721	577.1	.00529	.000908	45	.95282	660.8	.02053	.003507
		90	.93332	612.8	.01235	.002119	0	.94394	659.1	.02263	.003866
7.13		0	.91554	585.5	.00748	.001284	90	.92451	602.1	.00980	.001674
		45	.90943	573.5	.00569	.000976	45	.95393	660.5	.02043	.003490
		90	.92943	605.1	.01083	.001858	0	.94838	662.8	.02297	.003924
8.49		0	.89887	581.5	.00830	.001424	90	.91397	583.5	.00643	.001098
		45	.90720	578.1	.00607	.001042	45	.95171	653.5	.01643	.002807
		90	.91554	583.8	.00695	.001193	0	.95892	661.5	.01745	.002981
9.27		0	.88831	554.1	.00373	.000640	90	.92396	572.8	.00310	.000530
		45	.89276	548.1	.00253	.000434	45	.94949	626.5	.01176	.002009
		90	—	—	—	—	0	.96114	645.1	.01151	.001966
10.84		0	.87942	563.1	.00559	.000959	90	.89998	574.1	.00634	.001083
		45	.84997	533.1	.00475	.000815	45	.95226	638.8	.01581	.002701
		90	.90832	589.5	.00755	.001296	0	.95282	659.8	.01983	.003388
11.30		0	.93499	634.8	.01342	.002303	90	—	—	—	—
		45	.84720	541.1	.00721	.001237	45	.93506	644.8	.01834	.003133
		90	—	—	—	—	0	.98112	677.1	.01521	.002598
11.59	1.90	0	.90554	589.5	.00927	.001591	90	.90897	613.5	.01183	.002021
		45	.87164	586.1	.01240	.002128	45	.95504	665.1	.02052	.003506
		90	.91054	611.5	.01591	.002730	0	.98889	696.5	.02559	.004372
12.32		0	.87664	565.1	.00758	.001301	90	.90731	592.8	.00981	.001676
		45	.88053	565.1	.00767	.001316	45	.95004	650.5	.01630	.002785
		90	.90887	594.1	.01133	.001944	0	.97169	675.5	.02023	.003456
13.82		0	.91721	579.8	.00545	.000935	90	.94560	607.8	.00690	.001179
		45	.93832	587.1	.00453	.000777	45	.96503	642.5	.01250	.002135
		90	.95054	617.1	.00959	.001646	0	.96503	655.1	.01350	.002306
15.02	1.15	0	.99888	704.8	.02724	.004674	90	.97779	640.1	.00919	.001570
		45	.93776	639.8	.01413	.002425	45	.97557	672.8	.01592	.002720
		90	.98610	695.8	.02589	.004443	0	.99389	669.8	.01270	.002170
15.12		180	.97221	666.1	.00824	.001414	180	—	—	—	—
15.51		180	.98999	703.5	.01561	.002679	180	.96059	676.8	.01202	.002053

[a]Radius is listed only for hemispherical heat shield, step between parachute and radar canisters, and exit flat face.

[b]Accuracy depends on magnitude: h > 0.015, accuracy 10 percent; 0.001 ≦ h ≦ 0.015, accuracy 15 percent; h < 0.001, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VI. - HEAT-TRANSFER MEASUREMENTS ON EXIT CONFIGURATION - Continued

(b) M = 4.44

x, in.	r, in. (a)	$\alpha = 0^\circ$ Leeward (T_t = 684.2°)					$\alpha = 0^\circ$ Windward (T_t = 678.2°)				
		ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	.98393	591.5	.00058	.000311	90	.97073	574.1	.00051	.000272
		45	.98836	593.5	.00053	.000284	45	.97467	576.5	.00062	.000331
		90	.98171	589.8	.00053	.000284	0	.97017	573.8	.00062	.000331
-.62	3.86	0	———	586.8	LOW	LOW	90	———	573.5	LOW	LOW
		45	———	587.1	LOW	LOW	45	———	572.1	LOW	LOW
		90	———	588.5	LOW	LOW	0	———	571.5	LOW	LOW
-.11	5.05	0	.96176	583.5	.00153	.000820	90	.95553	571.8	.00140	.000748
		45	.95013	578.1	.00149	.000799	45	.94653	565.5	.00135	.000721
		90	.95567	579.1	.00108	.000579	0	.95441	571.5	.00147	.000785
.45		0	.94736	591.8	.00522	.002798	90	.95272	588.1	.00583	.003114
		45	.95290	596.8	.00588	.003152	45	.95047	587.1	.00591	.003157
		90	.95234	593.8	.00505	.002707	0	.94371	581.8	.00527	.002815
1.69		0	.94791	587.1	.00390	.002091	90	.94259	575.5	.00401	.002142
		45	.93849	582.1	.00439	.002353	45	.93640	572.5	.00436	.002329
		90	.94459	585.1	.00412	.002208	0	.94371	576.5	.00400	.002137
2.93		0	.93627	579.5	.00383	.002053	90	.93640	571.8	.00418	.002233
		45	.93517	579.8	.00410	.002198	45	.93471	571.1	.00412	.002201
		90	.93904	581.5	.00403	.002160	0	.93246	572.5	.00389	.002078
4.36		0	.93406	578.1	.00389	.002085	90	.93640	572.1	.00417	.002227
		45	.93794	580.8	.00395	.002117	45	.93414	576.5	.00407	.002174
		90	.93295	577.8	.00405	.002171	0	.93020	570.8	.00375	.002003
5.78		0	.92464	572.5	.00396	.002123	90	.92120	563.1	.00422	.002254
		45	.92408	572.1	.00387	.002074	45	.92233	569.1	.00394	.002104
		90	.92298	572.5	.00437	.002342	0	.92458	564.8	.00405	.002163
7.13		0	.92575	575.5	.00475	.002546	90	.92176	565.8	.00504	.002692
		45	.92464	574.5	.00457	.002450	45	.92176	571.1	.00461	.002462
		90	.91633	570.5	.00492	.002637	0	.92401	566.5	.00469	.002505
8.49		0	.94015	582.8	.00402	.002155	90	.93977	574.1	.00405	.002163
		45	.94126	587.1	.00494	.002648	45	.93696	575.8	.00480	.002564
		90	.94182	584.1	.00418	.002241	0	.93865	579.1	.00396	.002115
9.27		0	.94459	572.1	.00120	.000643	90	.93527	559.8	.00109	.000582
		45	.92408	564.8	.00214	.001147	45	.91726	553.1	.00191	.001020
		90	.93794	568.1	.00107	.000574	0	.93527	557.5	.00098	.000523
10.84		0	.91965	568.8	.00376	.002015	90	.90657	547.8	.00242	.001293
		45	.91356	565.1	.00386	.002069	45	.91107	553.8	.00339	.001811
		90	.91079	561.8	.00270	.001447	0	.90994	552.8	.00231	.001234
11.30		0	———	———	———	———	90	.91895	568.8	.00566	.003023
		45	.92076	578.1	.00598	.003205	45	.92401	568.8	.00571	.003050
		90	———	———	———	———	0	———	———	———	———
11.59	1.90	0	.97063	617.5	.00896	.004803	90	.96116	602.8	.00878	.004690
		45	.95511	608.8	.00926	.004964	45	.95609	601.5	.00918	.004903
		90	.96287	612.1	.00896	.004803	0	.96960	607.5	.00824	.004401
12.32		0	.96287	602.5	.00547	.002932	90	.95947	603.1	.00667	.003563
		45	.96232	602.8	.00578	.003098	45	.96229	594.8	.00581	.003103
		90	.96065	603.5	.00668	.003581	0	.96229	593.8	.00548	.002927
13.82		0	.97007	589.1	.00131	.000702	90	.95947	575.1	.00147	.000785
		45	.97839	591.8	.00114	.000611	45	.97748	584.8	.00123	.000657
		90	.96121	583.8	.00155	.000831	0	.97017	578.1	.00110	.000588
15.02	1.15	0	.99279	626.5	.00737	.003951	90	.98255	616.8	.00900	.004807
		45	.95511	605.1	.00803	.004304	45	———	———	———	———
		90	.98393	625.8	.00883	.004733	0	.99155	617.1	.00741	.003958
15.12		180	———	———	———	———	180	.97748	624.8	.00524	.002799
15.51		180	.98891	648.5	.01079	.005784	180	———	———	———	———

[a] Radius is listed only for hemispherical heat shield, step between parachute and radar canisters, and exit flat face.

[b] Accuracy depends on magnitude: h > 0.015, accuracy 10 percent; 0.001 ≦ h ≦ 0.015, accuracy 15 percent; h < 0.001, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VI. - HEAT-TRANSFER MEASUREMENTS ON EXIT CONFIGURATION - Continued

(b) M = 4.44 - Continued

		$\alpha = 5^\circ$					$\alpha = -5^\circ$				
		Leeward (T_t = 687.2°)					Windward (T_t = 667.2°)				
x, in.	r, in. (a)	φ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	φ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	.97996	587.5	.00063	.000339	90	.97753	577.8	.00038	.000202
		45	.98330	589.8	.00066	.000355	45	.98483	583.1	.00045	.000239
		90	.97606	585.8	.00067	.000361	0	——	582.1	LOW	LOW
-.62	3.86	0	——	581.1	LOW	LOW	90	——	579.1	LOW	LOW
		45	——	581.8	LOW	LOW	45	——	581.1	LOW	LOW
		90	——	583.5	LOW	LOW	0	——	582.5	LOW	LOW
-.11	5.05	0	.95547	578.5	.00144	.000775	90	.95675	571.1	.00094	.000500
		45	.94712	574.1	.00147	.000791	45	.95226	569.5	.00132	.000702
		90	.95046	576.5	.00129	.000694	0	.96069	574.1	.00130	.000691
.45		0	.93655	583.1	.00365	.001964	90	.95282	585.8	.00501	.002665
		45	.95213	597.5	.00488	.002626	45	.95395	591.5	.00704	.003744
		90	.94657	593.5	.00454	.002443	0	.95002	590.8	.00745	.003962
1.69		0	.94100	580.5	.00281	.001512	90	.94721	580.5	.00355	.001888
		45	.94100	584.8	.00379	.002040	45	.94272	579.1	.00538	.002861
		90	.94211	586.8	.00396	.002131	0	.95170	590.1	.00528	.002808
2.93		0	.93098	574.1	.00284	.001528	90	.94159	585.8	.00369	.001963
		45	.93822	583.1	.00374	.002013	45	.94159	585.8	.00517	.002750
		90	.93989	585.1	.00399	.002147	0	.94215	587.8	.00558	.002968
4.36		0	.93376	576.1	.00292	.001571	90	.94103	574.5	.00405	.002154
		45	.93989	584.1	.00368	.001980	45	.94215	581.8	.00475	.002526
		90	.93989	585.5	.00423	.002276	0	.94047	582.8	.00514	.002734
5.78		0	.92987	574.8	.00308	.001657	90	.92418	570.5	.00404	.002149
		45	.92319	574.8	.00383	.002061	45	.92980	570.5	.00430	.002287
		90	.93376	582.8	.00440	.002368	0	.93373	578.1	.00506	.002691
7.13		0	.93432	579.1	.00336	.001808	90	.92306	565.8	.00475	.002526
		45	.91929	574.5	.00454	.002443	45	.92475	568.8	.00531	.002824
		90	.92597	582.1	.00533	.002868	0	.92812	572.8	.00597	.003175
8.49		0	.93432	579.5	.00306	.001647	90	.94103	574.5	.00395	.002101
		45	.93376	582.5	.00381	.002050	45	.93766	578.8	.00548	.002915
		90	.95102	593.1	.00391	.002104	0	.94159	578.8	.00492	.002617
9.27		0	.93655	568.1	.00128	.000689	90	.93373	557.8	.00104	.000553
		45	.91317	557.1	.00192	.001033	45	——	——	——	——
		90	.94267	570.5	.00113	.000608	0	.93991	562.1	.00115	.000612
10.84		0	.92709	573.1	.00297	.001598	90	.90397	546.5	.00219	.001165
		45	.89692	555.1	.00322	.001733	45	.91351	556.8	.00371	.001973
		90	.91540	566.5	.00321	.001727	0	.91351	553.1	.00279	.001484
11.30		0	——	——	——	——	90	.91464	566.5	.00580	.003085
		45	.90649	569.8	.00525	.002825	45	.91969	567.8	.00532	.002829
		90	——	——	——	——	0	——	——	——	——
11.59	1.90	0	.97050	608.8	.00457	.002459	90	.95563	598.5	.00777	.004132
		45	.93543	596.8	.00685	.003686	45	.95114	600.1	.01060	.005638
		90	.95937	621.1	.00987	.005311	0	.96799	611.8	.01094	.005818
12.32		0	.95658	594.8	.00365	.001964	90	.94721	585.5	.00558	.002968
		45	.93822	587.5	.00446	.002400	45	.95282	589.5	.00613	.003260
		90	.95157	604.8	.00673	.003622	0	.95395	593.1	.00537	.002856
13.82		0	.96438	591.1	.00213	.001146	90	.97136	579.1	.00085	.000452
		45	.96326	588.8	.00192	.001033	45	.96293	575.1	.00139	.000739
		90	.95046	589.1	.00324	.001744	0	.95058	571.8	.00165	.000878
15.02	1.15	0	.99387	644.1	.01056	.005683	90	.98203	608.1	.00601	.003196
		45	.95881	615.5	.00797	.004289	45	——	——	——	——
		90	.98497	645.1	.01307	.007033	0	.99045	613.1	.00624	.003319
15.12		180	——	——	——	——	180	.97697	621.5	.00467	.002484
15.51		180	——	——	——	——	180	.98820	636.1	.00792	.004212

[a]Radius is listed only for hemispherical heat shield, step between parachute and radar canisters, and exit flat face.
[b]Accuracy depends on magnitude: h > 0.015, accuracy 10 percent; 0.001 ≤ h ≤ 0.015, accuracy 15 percent; h < 0.001, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VI. - HEAT-TRANSFER MEASUREMENTS ON EXIT CONFIGURATION - Continued

(b) M = 4.44 - Continued

		$\alpha = 10^{\circ}$					$\alpha = -10^{\circ}$				
		Leeward ($T_t = 670.8^{\circ}$)					Windward ($T_t = 681.8^{\circ}$)				
x, in.	r, in. (a)	ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	.93026	547.5	.00040	.000212	90	—	575.1	LOW	LOW
		45	.93649	550.5	.00035	.000186	45	—	583.1	LOW	LOW
		90	.93253	549.1	.00035	.000186	0	—	—	—	—
-.62	3.86	0	.92969	546.8	.00036	.000191	90	—	577.1	LOW	LOW
		45	.93253	549.1	.00048	.000255	45	—	580.1	LOW	LOW
		90	.93706	552.1	.00042	.000223	0	—	588.8	LOW	LOW
-.11	5.05	0	.93593	558.1	.00119	.000632	90	.94957	568.5	.00113	.000609
		45	.91948	545.5	.00125	.000664	45	.94733	570.1	.00174	.000937
		90	.92856	552.8	.00164	.000871	0	—	—	—	—
.45		0	.93763	568.8	.00311	.001651	90	.94004	581.1	.00516	.002779
		45	.92969	564.8	.00341	.001811	45	.95237	600.1	.00906	.004880
		90	.93536	577.5	.00593	.003149	0	.94453	601.1	.01112	.005989
1.69		0	.94330	567.8	.00232	.001232	90	.94340	578.8	.00406	.002187
		45	.92062	555.5	.00283	.001503	45	.94509	589.8	.00726	.003910
		90	.93593	572.8	.00445	.002363	0	.94789	596.1	.00846	.004557
2.93		0	.93196	561.1	.00240	.001274	90	.93948	576.5	.00410	.002208
		45	.91722	553.8	.00294	.001561	45	.94733	590.8	.00671	.003614
		90	.93423	571.5	.00467	.002480	0	.94509	593.5	.00813	.004379
4.36		0	.93423	563.1	.00249	.001322	90	.94060	576.8	.00421	.002268
		45	.92005	556.1	.00310	.001646	45	.94957	591.5	.00654	.003523
		90	.93706	573.1	.00467	.002480	0	.95069	596.5	.00786	.004234
5.78		0	.92969	561.1	.00270	.001434	90	.92211	566.5	.00416	.002241
		45	.91098	553.5	.00358	.001901	45	.93892	584.5	.00613	.003302
		90	.92289	564.8	.00473	.002512	0	.94845	593.8	.00742	.003997
7.13		0	.93082	562.1	.00283	.001503	90	.91931	565.5	.00444	.002391
		45	.91552	558.5	.00410	.002177	45	.93388	581.1	.00632	.003404
		90	.90985	556.1	.00452	.002400	0	.94284	590.8	.00756	.004072
8.49		0	.92572	561.8	.00290	.001540	90	.92940	567.5	.00344	.001853
		45	.92515	561.8	.00329	.001747	45	.94228	586.5	.00579	.003119
		90	.91495	555.8	.00325	.001726	0	.95461	596.5	.00575	.003097
9.27		0	.91778	549.1	.00130	.000690	90	.93332	558.1	.00102	.000549
		45	.90361	537.5	.00138	.000733	45	.92940	562.8	.00251	.001352
		90	.90985	542.5	.00127	.000674	0	.95349	572.8	.00166	.000894
10.84		0	.90815	543.5	.00179	.000950	90	.91315	552.1	.00229	.001233
		45	.88490	533.5	.00272	.001444	45	.92435	567.8	.00426	.002295
		90	.89397	539.1	.00271	.001439	0	.92828	569.5	.00342	.001842
11.30		0	—	—	—	—	90	.92155	571.8	.00509	.002742
		45	.88944	544.1	.00464	.002464	45	.92267	574.5	.00642	.003458
		90	.90644	561.8	.00562	.002984	0	—	—	—	—
11.59	1.90	0	.94670	577.8	.00358	.001901	90	.95293	600.8	.00830	.004471
		45	.91381	569.5	.00689	.003659	45	.95069	604.1	.01062	.005720
		90	.93876	592.1	.00902	.004790	0	.97478	622.5	.01182	.006366
12.32		0	.92119	559.8	.00333	.001768	90	.93892	581.1	.00514	.002769
		45	.91608	557.5	.00373	.001981	45	.95853	596.8	.00609	.003280
		90	.93649	577.8	.00585	.003106	0	.96302	601.5	.00658	.003544
13.82		0	.93990	562.5	.00190	.001009	90	.95741	571.5	.00123	.000663
		45	.94613	565.1	.00179	.000950	45	.96189	579.1	.00183	.000986
		90	.94046	572.5	.00385	.002044	0	.95741	578.5	.00208	.001120
15.02	1.15	0	.99319	635.1	.01314	.006977	90	.98038	610.5	.00581	.003129
		45	—	—	—	—	45	—	—	—	—
		90	.97618	629.8	.01559	.008278	0	.98935	618.8	.00687	.003700
15.12		180	—	—	—	—	180	.97366	630.8	.00507	.002731
15.36		180	.94443	555.1	LOW	LOW	180	—	—	—	—
15.51		180	.98752	643.5	.01084	.005756	180	.97926	641.1	.00910	.004901

[a]Radius is listed only for hemispherical heat shield, step between parachute and radar canisters, and exit flat face.

[b]Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leq h \leq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-$^{\circ}$R.)

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TABLE VI.- HEAT-TRANSFER MEASUREMENTS ON EXIT CONFIGURATION - Continued

(b) M = 4.44 - Continued

		$\alpha = 15^{\circ}$					$\alpha = -15^{\circ}$				
		Leeward ($T_t = 669.5^{\circ}$)					Windward ($T_t = 675.2^{\circ}$)				
x, in.	r, in. (a)	ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	.94157	549.1	.00060	.000329	90	——	567.8	LOW	LOW
		45	.94844	550.5	LOW	LOW	45	——	575.1	LOW	LOW
		90	.94099	546.8	.00030	.000164	0	——	——	——	——
-.62	3.86	0	.94558	549.5	.00033	.000181	90	——	569.5	LOW	LOW
		45	——	548.8	LOW	LOW	45	——	572.1	LOW	LOW
		90	——	548.5	LOW	LOW	0	——	578.8	LOW	LOW
-.11	5.05	0	.95302	557.8	.00096	.000526	90	.93115	556.1	.00089	.000472
		45	.92496	540.8	.00090	.000493	45	.93395	562.5	.00177	.000939
		90	.92725	548.5	.00164	.000899	0	.94515	568.1	.00173	.000918
.45		0	.95131	567.1	.00242	.001327	90	.92500	570.8	.00664	.003524
		45	.92782	553.5	.00250	.001371	45	.94459	592.8	.01175	.006235
		90	.93240	575.1	.00683	.003745	0	.93899	592.8	.01334	.007079
1.69		0	.95417	565.5	.00185	.001014	90	.93004	569.5	.00477	.002531
		45	.93011	551.5	.00195	.001069	45	.93395	581.8	.00938	.004978
		90	.93355	569.1	.00517	.002835	0	.93619	586.8	.01068	.005668
2.93		0	.94042	558.1	.00207	.001135	90	.93115	569.1	.00441	.002340
		45	.92553	549.8	.00208	.001140	45	.93787	584.1	.00907	.004813
		90	.93412	568.5	.00512	.002807	0	.93060	584.8	.01161	.006161
4.36		0	.93870	558.8	.00227	.001245	90	.93899	572.8	.00415	.002202
		45	.92725	552.1	.00224	.001228	45	.94403	587.1	.00862	.004574
		90	.94214	572.1	.00481	.002637	0	.93563	586.8	.01118	.005933
5.78		0	.93011	555.1	.00256	.001404	90	.92612	564.8	.00397	.002107
		45	.91293	544.8	.00240	.001316	45	.94403	586.5	.00809	.004293
		90	.93355	566.1	.00448	.002456	0	.94291	591.1	.01099	.005832
7.13		0	.93068	556.8	.00282	.001546	90	.92276	563.1	.00399	.002117
		45	.90892	543.1	.00270	.001480	45	.94403	585.8	.00782	.004150
		90	.92324	559.8	.00443	.002429	0	.94850	593.8	.01051	.005577
8.49		0	.93011	559.1	.00318	.001743	90	.91940	555.8	.00271	.001438
		45	.91064	543.8	.00240	.001316	45	.94906	587.8	.00720	.003821
		90	.92438	554.1	.00283	.001552	0	.95914	596.5	.00817	.004336
9.27		0	.92266	544.1	.00129	.000707	90	.92332	551.1	.00106	.000563
		45	.90491	530.5	.00106	.000581	45	.93731	567.8	.00285	.001512
		90	.92496	547.8	.00117	.000641	0	.95634	576.5	.00205	.001088
10.84		0	.90720	539.5	.00182	.000998	90	.89254	537.8	.00212	.001125
		45	.88486	526.5	.00222	.001217	45	.93731	575.5	.00517	.002744
		90	.90319	540.8	.00280	.001535	0	.93843	573.8	.00422	.002239
11.30		0	——	——	——	——	90	.89478	549.5	.00487	.002584
		45	.88715	536.1	.00407	.002231	45	.92612	573.5	.00673	.003571
		90	.91178	561.5	.00519	.002846	0	——	——	——	——
11.59	1.90	0	.93527	564.8	.00340	.001864	90	.92164	571.1	.00698	.003704
		45	.91121	562.8	.00655	.003591	45	.94739	596.1	.01171	.006214
		90	.93584	579.1	.00665	.003646	0	.97985	621.8	.01489	.007902
12.32		0	.91235	548.8	.00309	.001694	90	.92444	565.8	.00476	.002526
		45	.91694	554.5	.00393	.002155	45	.95410	589.8	.00668	.003545
		90	.92324	566.8	.00585	.003207	0	.96474	600.5	.00807	.004283
13.82		0	.95474	568.1	.00218	.001195	90	.94571	568.5	.00191	.001014
		45	.95532	568.1	.00216	.001184	45	.95970	579.8	.00242	.001284
		90	.94672	569.8	.00335	.001837	0	.95522	579.5	.00284	.001507
15.02	1.15	0	1.00228	647.1	.02128	.011667	90	.97425	601.1	.00582	.003089
		45	——	——	——	——	45	——	——	——	——
		90	.98338	636.1	.01650	.009046	0	.98768	613.1	.00750	.003980
15.36		180	——	553.8	LOW	LOW	180	——	——	——	——
15.51		180	.99369	646.5	.00976	.005351	180	.96977	632.1	.00937	.004972

[a] Radius is listed only for hemispherical heat shield, step between parachute and radar canisters, and exit flat face.

[b] Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leq h \leq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VI. - HEAT-TRANSFER MEASUREMENTS ON EXIT CONFIGURATION - Concluded

(b) M = 4.44 - Concluded

		$\alpha = 20^{\circ}$					$\alpha = -20^{\circ}$				
x, in.	r, in. (a)	Leeward ($T_t = 677.8^{\circ}$)					Windward ($T_t = 677.8^{\circ}$)				
		ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	ø, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0 45 90	——— ——— ———	562.1 561.8 562.8	LOW LOW LOW	LOW LOW LOW	90 45 0	——— ——— ———	572.8 579.5 ———	LOW LOW ———	LOW LOW ———
-.62	3.86	0 45 90	——— ——— ———	564.1 559.8 563.1	LOW LOW LOW	LOW LOW LOW	90 45 0	——— ——— ———	570.1 573.1 576.1	LOW LOW LOW	LOW LOW LOW
-.11	5.05	0 45 90	.96212 .92367 .92819	566.8 545.1 554.5	.00077 .00081 .00171	.000413 .000434 .000917	90 45 0	.92310 .92591 .93770	556.5 562.1 571.5	.00169 .00238 .00276	.000903 .001272 .001475
.45		0 45 90	.95081 .91180 .92819	571.5 548.5 584.5	.00182 .00198 .00701	.000976 .001062 .003758	90 45 0	.92198 .94331 .94780	588.8 614.1 621.1	.00815 .01436 .01742	.004355 .007673 .009308
1.69		0 45 90	.95024 .91349 .92480	570.1 543.1 575.8	.00165 .00124 .00569	.000885 .000665 .003051	90 45 0	.92198 .93152 .94275	576.8 598.5 614.8	.00612 .01202 .01483	.003270 .006423 .007924
2.93		0 45 90	.93498 .90954 .92254	561.5 539.5 575.1	.00179 .00104 .00604	.000960 .000558 .003238	90 45 0	.92030 .93152 .92872	575.8 604.5 607.1	.00631 .01304 .01581	.003372 .006968 .008448
4.36		0 45 90	.92932 .91802 .92650	559.8 544.1 577.1	.00196 .00097 .00594	.001051 .000520 .003185	90 45 0	.92310 .93433 .92479	577.5 607.5 607.8	.00627 .01358 .01899	.003350 .007256 .010147
5.78		0 45 90	.91745 .91067 .91632	554.5 541.5 567.8	.00247 .00103 .00521	.001324 .000552 .002793	90 45 0	.91132 .92647 .92703	566.8 601.5 607.8	.00535 .01267 .01774	.002859 .006770 .009479
7.13		0 45 90	.91293 .90840 .91236	555.5 543.8 560.1	.00291 .00154 .00414	.001560 .000826 .002220	90 45 0	.91525 .93433 .93208	565.5 603.1 611.5	.00453 .01318 .01792	.002421 .007043 .009575
8.49		0 45 90	.90954 .90784 .92141	557.1 542.1 557.5	.00292 .00135 .00241	.001566 .000724 .001292	90 45 0	.91525 .94331 .95510	558.5 605.1 620.5	.00271 .00862 .01002	.001448 .004606 .005354
9.27		0 45 90	.90445 .89591 .92367	539.1 528.5 549.5	.00107 .00068 .00105	.000574 .000365 .000563	90 45 0	.92030 .93657 .95341	552.1 576.8 583.8	.00118 .00385 .00300	.000631 .002057 .001603
10.84		0 45 90	.88516 .84669 .89704	531.5 508.5 544.5	.00159 .00177 .00272	.000852 .000949 .001458	90 45 0	.89274 .94724 .94050	544.5 595.5 604.5	.00271 .00727 .00647	.001448 .003885 .003457
11.30		0 45 90	——— .84782 .89704	——— 516.1 561.1	——— .00291 .00471	——— .001560 .002525	90 45 0	.89161 .93433 ———	554.8 597.8 ———	.00467 .00990 ———	.002495 .005290 ———
11.59	1.90	0 45 90	.90332 .86762 .90105	553.5 543.8 564.8	.00291 .00499 .00586	.001560 .002675 .003142	90 45 0	.90122 .94668 .98653	565.1 610.8 649.8	.00607 .01545 .01960	.003243 .008255 .010473
12.32		0 45 90	.88799 .88120 .89647	540.8 537.5 553.8	.00271 .00309 .00489	.001453 .001657 .002622	90 45 0	.90290 .94499 .96576	559.8 598.5 627.5	.00471 .00897 .01253	.002517 .004793 .006695
13.82		0 45 90	.94798 .94685 .94120	571.8 564.8 574.1	.00202 .00139 .00326	.001083 .000745 .001748	90 45 0	.93994 .95734 .95566	574.1 589.5 590.8	.00251 .00374 .00399	.001341 .001998 .002132
15.02	1.15	0 45 90	.99717 ——— .98077	654.8 ——— 642.8	.01449 ——— .01309	.007769 ——— .007018	90 45 0	.97249 ——— .98933	609.5 ——— 626.5	.00603 ——— .00847	.003222 ——— .004526
15.12		180	———	———	———	———	180	.96183	619.8	.00450	.002405
15.36		180	———	552.5	LOW	LOW	180	———	———	———	———
15.51		180	.98925	650.8	.00704	.003774	180	.96632	627.1	.00829	.004430

[a]Radius is listed only for hemispherical heat shield, step between parachute and radar canisters, and exit flat face.
[b]Accuracy depends on magnitude: h > 0.015, accuracy 10 percent; 0.001 ≦ h ≦ 0.015, accuracy 15 percent; h < 0.001, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VII. - HEAT-TRANSFER MEASUREMENTS ON ESCAPE CONFIGURATION

(a) M = 3.50

x, in.	r, in. (a)	$\alpha = 0^{\circ}$ Leeward (T_t = 710.5°) ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	$\alpha = 0^{\circ}$ Windward (T_t = 714.5°) ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	.93590	563.8	.00159	.000270	90	.94712	576.5	.00167	.000284
		45	.94827	570.5	.00145	.000246	45	.95213	578.5	.00148	.000252
		90	.94490	569.8	.00172	.000292	0	.94100	572.1	.00155	.000264
-.62	3.86	0	.93872	564.5	.00144	.000244	90	.93989	569.8	.00125	.000213
		45	.94434	567.1	.00123	.000209	45	.94879	575.5	.00125	.000213
		90	.93759	562.5	.00120	.000204	0	.94323	572.8	.00136	.000231
-.11	5.05	0	.91286	568.1	.00375	.000636	90	.93488	580.1	.00326	.000555
		45	.93928	577.8	.00468	.000794	45	.94768	589.8	.00492	.000837
		90	.93703	570.1	.00287	.000487	0	.91317	573.5	.00372	.000633
.45		0	.87013	583.5	.01735	.002944	90	.92375	633.5	.01976	.003363
		45	.93590	629.1	.02076	.003523	45	.94323	640.5	.02221	.003780
		90	.93478	632.5	.01821	.003090	0	.86197	590.1	.01777	.003024
1.69		0	.86057	566.8	.01401	.002377	90	.91206	607.1	.01567	.002667
		45	.90892	599.8	.01542	.002616	45	.91707	611.1	.01651	.002810
		90	.92129	605.5	.01475	.002503	0	.85298	565.5	.01382	.002352
2.93		0	.85607	560.5	.01290	.002189	90	.91261	606.5	.01570	.002672
		45	.90611	597.1	.01459	.002476	45	.91428	609.5	.01612	.002744
		90	.91960	604.1	.01516	.002572	0	.84964	560.5	.01288	.002192
4.36		0	.86226	561.1	.01174	.001992	90	.92764	615.5	.01523	.002592
		45	.91117	598.1	.01355	.002299	45	.92041	611.8	.01521	.002589
		90	.93253	612.8	.01484	.002518	0	.85966	563.1	.01172	.001995
5.78		0	.87463	564.8	.01079	.001831	90	.90761	602.5	.01525	.002595
		45	.90611	593.5	.01273	.002160	45	.91540	608.5	.01476	.002512
		90	.91061	599.1	.01516	.002572	0	.87637	569.5	.01071	.001823
7.13		0	.88587	568.8	.00987	.001675	90	.90983	602.8	.01461	.002487
		45	.90667	591.8	.01244	.002111	45	.91428	607.5	.01499	.002551
		90	.91286	600.1	.01472	.002498	0	.88806	573.8	.00968	.001647
8.49		0	.88643	576.1	.00894	.001517	90	.92319	612.1	.01125	.001915
		45	.90836	593.5	.01227	.002082	45	.91484	615.8	.01373	.002337
		90	.92972	603.8	.01200	.002036	0	.88584	572.8	.00915	.001557
9.27		0	.88699	549.1	.00412	.000699	90	.90705	568.1	.00437	.000744
		45	.89262	558.8	.00607	.001030	45	.89976	570.1	.00652	.001110
		90	.91173	565.1	.00429	.000728	0	.88528	553.1	.00417	.000710
10.84		0	.89205	560.1	.00601	.001020	90	.88695	560.5	.00603	.001026
		45	.90217	570.8	.00760	.001290	45	.90816	581.1	.00833	.001418
		90	.88868	557.5	.00615	.001044	0	.88918	564.1	.00637	.001084
11.30		0	.91286	591.5	.00791	.001342	90	.91095	608.8	.01114	.001896
		90	.91623	606.1	.01045	.001773	0	.90649	597.8	.00950	.001617
12.32		0	.94546	601.8	.00773	.001312	90	.95380	636.8	.01194	.002032
		45	.94827	618.8	.01177	.001997	45	.93209	623.5	.01170	.001991
		90	.95614	634.8	.01228	.002084	0	.94044	613.1	.00800	.001362
13.82		0	.92860	594.1	.00889	.001508	90	.90594	591.8	.01090	.001855
		45	.89768	576.1	.00921	.001563	45	.89419	580.8	.00986	.001678
		90	.90892	586.5	.01007	.001709	0	.92486	597.8	.00939	.001598

[a]Radius is listed only for hemispherical heat shield.

[b]Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leqq h \leqq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VII.- HEAT-TRANSFER MEASUREMENTS ON ESCAPE CONFIGURATION - Continued

(a) M = 3.50 - Continued

		$\alpha = 5^{0}$					$\alpha = -5^{0}$				
		Leeward (T_t = 711.8°)					Windward (T_t = 714.2°)				
x, in.	r, in. (a)	φ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	φ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	.94222	565.1	.00104	.000177	90	.94270	574.1	.00153	.000260
		45	.93829	565.1	.00140	.000238	45	.94548	575.5	.00153	.000260
		90	.93493	566.1	.00187	.000317	0	.93936	573.1	.00181	.000308
-.62	3.86	0	.94278	563.5	.00082	.000139	90	.93380	568.5	.00153	.000260
		45	.93549	561.5	.00114	.000193	45	.94493	576.1	.00168	.000286
		90	.92539	557.8	.00145	.000246	0	.94159	573.8	.00172	.000293
-.11	5.05	0	.92820	562.1	.00233	.000395	90	.93658	576.1	.00291	.000495
		45	.92595	569.8	.00329	.000558	45	.94103	588.8	.00542	.000922
		90	.92876	573.5	.00344	.000584	0	.92991	577.5	.00444	.000755
.45		0	.92259	604.1	.01258	.002135	90	.94270	631.5	.01583	.002693
		45	.92932	611.1	.01511	.002565	45	.93380	641.1	.02440	.004151
		90	.92090	620.5	.02174	.003690	0	.91378	630.8	.02464	.004192
1.69		0	.92146	592.5	.00985	.001672	90	.93547	619.1	.01350	.002296
		45	.91586	591.5	.01127	.001913	45	.90599	613.5	.01952	.003321
		90	.89005	589.1	.01603	.002721	0	.89987	614.5	.02010	.003419
2.93		0	.91866	589.5	.00945	.001604	90	.93491	618.1	.01368	.002327
		45	.91866	593.8	.01106	.001877	45	.90043	610.1	.01898	.003229
		90	.88164	581.1	.01544	.002621	0	.88874	606.5	.02003	.003407
4.36		0	.92315	590.8	.00912	.001548	90	.95049	627.8	.01341	.002281
		45	.93156	601.1	.01067	.001811	45	.90209	610.8	.01872	.003184
		90	.89791	587.1	.01366	.002318	0	.88429	603.5	.01978	.003365
5.78		0	.92595	590.5	.00869	.001475	90	.92991	615.1	.01372	.002334
		45	.93212	599.8	.01005	.001706	45	.89598	605.5	.01755	.002985
		90	.89566	581.8	.01223	.002076	0	.87984	604.1	.01855	.003156
7.13		0	.93212	593.5	.00836	.001419	90	.92546	614.8	.01433	.002438
		45	.93100	599.1	.01022	.001735	45	.90043	610.8	.01887	.003210
		90	.91305	586.8	.01018	.001728	0	.88930	597.1	.01554	.002644
8.49		0	.93605	594.5	.00772	.001310	90	.92935	614.1	.01187	.002019
		45	.93044	602.5	.01103	.001872	45	.89319	607.8	.01498	.002548
		90	.91810	589.1	.00940	.001595	0	.89208	589.5	.01191	.002026
9.27		0	.93156	579.1	.00431	.000732	90	.91711	576.1	.00419	.000713
		45	.91249	570.1	.00577	.000979	45	.88263	564.1	.00723	.001230
		90	.91249	564.5	.00390	.000662	0	.88596	560.8	.00510	.000868
10.84		0	.91754	568.1	.00443	.000752	90	.89319	566.1	.00603	.001026
		45	.92427	581.8	.00657	.001115	45	.89598	580.1	.00955	.001625
		90	.90632	570.1	.00624	.001059	0	.88207	564.8	.00738	.001255
11.30		0	.93605	603.1	.00716	.001215	90	.90710	594.5	.01000	.001701
		90	.92876	602.5	.00811	.001377	0	.90043	598.8	.01297	.002206
12.32		0	.95961	607.1	.00549	.000932	90	.92991	599.8	.00833	.001417
		45	.95400	617.1	.00799	.001356	45	.93491	637.5	.01467	.002496
		90	.96017	623.1	.00871	.001478	0	.93324	604.5	.00825	.001403
13.82		0	.95063	597.8	.00665	.001129	90	.90543	598.1	.01178	.002004
		45	.93941	597.1	.00774	.001314	45	.88429	581.5	.01142	.001943
		90	.92707	591.5	.00857	.001455	0	.94715	613.8	.00975	.001659

[a]Radius is listed only for hemispherical heat shield.

[b]Accuracy depends on magnitude: h > 0.015, accuracy 10 percent; 0.001 ≦ h ≦ 0.015, accuracy 15 percent; h < 0.001, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VII. - HEAT-TRANSFER MEASUREMENTS ON ESCAPE CONFIGURATION - Continued

(a) M = 3.50 - Continued

x, in.	r, in. (a)	$\alpha = 10^\circ$ Leeward ($T_t = 715.8^\circ$) ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	$\alpha = -10^\circ$ Windward ($T_t = 713.8^\circ$) ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	.93616	563.5	.00118	.000201	90	.93425	567.1	.00138	.000235
		45	.94064	567.5	.00135	.000230	45	.93480	566.5	.00144	.000245
		90	.94736	572.8	.00146	.000248	0	.93480	564.8	.00108	.000184
-.62	3.86	0	.93336	561.5	.00112	.000191	90	.92700	562.1	.00131	.000223
		45	.93448	564.5	.00141	.000240	45	.93592	568.1	.00144	.000245
		90	.93896	566.8	.00132	.000225	0	.93759	566.8	.00107	.000182
-.11	5.05	0	.92832	568.1	.00243	.000413	90	.92756	572.8	.00279	.000474
		45	.92608	579.1	.00374	.000636	45	.93759	583.5	.00512	.000871
		90	.93840	572.1	.00267	.000454	0	.93592	584.1	.00410	.000697
.45		0	.91992	592.1	.00886	.001508	90	.92868	616.8	.01581	.002688
		45	.92552	621.1	.01371	.002333	45	.94205	644.1	.02552	.004339
		90	.94008	628.5	.01280	.002178	0	.94093	647.1	.02629	.004470
1.69		0	.91432	580.1	.00674	.001147	90	.92255	605.1	.01276	.002170
		45	.89808	583.8	.01077	.001833	45	.91698	619.8	.02078	.003533
		90	.93224	611.5	.01209	.002057	0	.93090	635.5	.02372	.004033
2.93		0	.91152	576.5	.00639	.001087	90	.92088	604.1	.01316	.002238
		45	.89304	578.8	.00999	.001700	45	.91029	616.1	.02032	.003455
		90	.92272	608.1	.01341	.002282	0	.92143	629.1	.02392	.004067
4.36		0	.91936	581.1	.00612	.001041	90	.93369	614.5	.01367	.002324
		45	.89920	580.5	.00912	.001552	45	.90973	615.8	.02104	.003578
		90	.92776	615.5	.01441	.002452	0	.91530	626.8	.02478	.004213
5.78		0	.92720	585.1	.00605	.001029	90	.90917	599.5	.01413	.002403
		45	.89304	573.5	.00821	.001397	45	.90082	610.1	.02063	.003508
		90	.89696	597.8	.01540	.002620	0	.90249	618.1	.02500	.004251
7.13		0	.93560	590.1	.00605	.001029	90	.90126	593.5	.01345	.002287
		45	.89248	574.8	.00853	.001451	45	.90305	612.1	.02131	.003623
		90	.88744	590.1	.01438	.002447	0	.89345	611.8	.02470	.004200
8.49		0	.93840	595.1	.00637	.001084	90	.88843	574.8	.00941	.001600
		45	.89416	573.5	.00806	.001371	45	.89847	609.1	.01935	.003290
		90	.88800	585.1	.00930	.001582	0	.90472	608.5	.01726	.002935
9.27		0	.93392	581.1	.00379	.000645	90	.89011	548.5	.00272	.000462
		45	.88016	550.5	.00500	.000851	45	.89513	576.8	.00943	.001603
		90	.89472	556.1	.00349	.000594	0	.89847	575.1	.00742	.001262
10.84		0	.92608	573.8	.00400	.000681	90	.86724	542.5	.00506	.000860
		45	.88632	556.1	.00526	.000895	45	.90416	586.8	.01100	.001870
		90	.87456	553.1	.00607	.001033	0	.89011	578.5	.01045	.001777
11.30		0	.93896	596.5	.00592	.001007	90	.88063	570.1	.00896	.001524
		90	.89304	584.5	.00985	.001676	0	.91530	621.8	.01986	.003377
12.32		0	.95128	605.5	.00532	.000905	90	.91586	585.5	.00777	.001321
		45	.92608	593.8	.00577	.000982	45	.93648	635.8	.01910	.003248
		90	.92104	601.1	.00960	.001634	0	.95709	629.8	.01219	.002073
13.82		0	.95912	609.8	.00678	.001154	90	.91698	607.1	.01394	.002370
		45	.92832	587.8	.00628	.001069	45	.89513	588.5	.01212	.002061
		90	.91992	591.5	.00832	.001416	0	.95208	613.8	.00927	.001576

[a] Radius is listed only for hemispherical heat shield.

[b] Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leq h \leq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VII. - HEAT-TRANSFER MEASUREMENTS ON ESCAPE CONFIGURATION - Continued

(a) M = 3.50 - Concluded

		$\alpha = 15^{\circ}$					$\alpha = -15^{\circ}$				
x, in.	r, in. (a)	Leeward ($T_t = 716.2^{\circ}$)					Windward ($T_t = 711.5^{\circ}$)				
		ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0 45 90	.91902 .92740 .93354	555.8 557.5 563.1	.00125 .00072 .00104	.000213 .000122 .000177	90 45 0	.92948 .93283 .93843	559.8 562.1 563.5	.00102 .00113 .00082	.000173 .000192 .000139
-.62	3.86	0 45 90	.91902 .91791 .92293	555.1 555.1 556.5	.00111 .00128 .00101	.000189 .000218 .000172	90 45 0	.92276 .93507 .94347	556.1 565.1 566.8	.00105 .00131 .00092	.000178 .000222 .000156
-.11	5.05	0 45 90	.92628 .90841 .92461	566.8 559.1 569.1	.00177 .00260 .00269	.000301 .000442 .000458	90 45 0	.92220 .93787 .94291	566.5 582.1 587.1	.00255 .00494 .00417	.000433 .000838 .000708
.45		0 45 90	.92852 .91791 .92852	588.8 587.8 614.5	.00644 .00834 .01418	.001096 .001419 .002412	90 45 0	.92052 .94739 .95354	606.5 647.5 656.1	.01254 .02426 .02525	.002128 .004117 .004285
1.69		0 45 90	.92852 .90506 .91567	584.8 572.8 600.5	.00575 .00671 .01223	.000978 .001142 .002081	90 45 0	.91604 .92556 .94571	595.8 628.1 646.1	.01021 .02246 .02331	.001733 .003811 .003956
2.93		0 45 90	.92237 .89613 .90506	582.1 566.5 593.1	.00603 .00640 .01234	.001026 .001089 .002099	90 45 0	.91269 .91604 .93563	591.5 623.8 639.5	.00978 .02288 .02329	.001660 .003883 .003952
4.36		0 45 90	.92070 .89110 .91902	583.1 562.1 598.1	.00646 .00618 .01095	.001099 .001051 .001863	90 45 0	.92388 .91045 .92892	599.1 620.8 636.5	.00980 .02312 .02423	.001663 .003923 .004112
5.78		0 45 90	.91791 .88384 .90897	583.5 556.1 587.8	.00711 .00578 .00988	.001210 .000983 .001681	90 45 0	.90597 .89645 .91492	588.5 609.5 626.5	.01018 .02131 .02390	.001728 .003616 .004056
7.13		0 45 90	.92293 .89389 .90841	588.1 563.8 588.5	.00744 .00607 .01005	.001266 .001033 .001710	90 45 0	.90541 .89590 .90261	588.1 604.1 618.5	.01012 .01891 .02347	.001717 .003209 .003983
8.49		0 45 90	.91902 .90841 .88384	588.5 577.1 566.1	.00755 .00642 .00756	.001284 .001092 .001286	90 45 0	.87799 .89254 .90709	571.5 595.8 610.8	.00796 .01478 .01636	.001351 .002508 .002776
9.27		0 45 90	.90506 .89613 .89669	562.5 554.8 554.8	.00361 .00368 .00308	.000614 .000626 .000524	90 45 0	.89142 .88022 .89645	549.1 565.8 577.5	.00302 .00834 .00821	.000512 .001415 .001393
10.84		0 45 90	.89669 .85369 .88384	553.5 526.5 556.8	.00330 .00328 .00596	.000561 .000558 .001014	90 45 0	.87575 .88862 .88694	543.8 574.5 580.5	.00459 .00930 .01193	.000779 .001578 .001957
11.30		0 90	.90953 .89724	577.8 592.1	.00472 .01173	.000803 .001996	90 0	.89030 .91380	573.8 618.8	.00830 .01671	.001408 .002836
12.32		0 45 90	.91679 .90506 .91846	571.8 583.5 601.1	.00409 .00630 .01007	.000696 .001072 .001713	90 45 0	.90485 .93395 .94962	586.5 640.8 626.8	.00771 .02079 .01236	.001308 .003528 .002097
13.82		0 45 90	.93410 .89278 .90339	593.5 566.5 583.1	.00668 .00629 .00879	.001136 .001070 .001495	90 45 0	.88470 .87519 .95354	599.8 596.1 622.5	.01550 .01253 .01033	.002630 .002126 .001753

[a]Radius is listed only for hemispherical heat shield.
[b]Accuracy depends on magnitude: h > 0.015, accuracy 10 percent; 0.001 ≦ h ≦ 0.015, accuracy 15 percent; h < 0.001, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VII. - HEAT-TRANSFER MEASUREMENTS ON ESCAPE CONFIGURATION - Continued

(b) M = 4.44

$\alpha = 0^{\circ}$

x, in.	r, in. (a)	Leeward (T_t = 666.8°)				
		∅, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	.95654	565.5	.00043	.000229
		45	.96049	567.5	.00033	.000175
		90	.94638	559.8	.00047	.000250
-.62	3.86	0	———	562.8	LOW	LOW
		45	.95315	562.8	.00032	.000170
		90	———	560.5	LOW	LOW
-.11	5.05	0	.91251	545.8	.00156	.000829
		45	.91985	551.5	.00209	.001111
		90	.93001	555.8	.00167	.000888
.45		0	.87357	541.1	.00733	.003898
		45	.90066	556.5	.00651	.003462
		90	.92662	575.1	.00831	.004419
1.69		0	.86510	530.5	.00544	.002893
		45	.87526	534.1	.00446	.002372
		90	.90179	553.1	.00576	.003063
2.93		0	.85946	532.5	.00482	.002563
		45	.87695	534.1	.00400	.002127
		90	.89671	549.8	.00585	.003111
4.36		0	.87074	531.5	.00464	.002467
		45	.89219	547.8	.00380	.002021
		90	.90969	558.8	.00615	.003270
5.78		0	.88768	539.8	.00366	.001946
		90	.88881	546.5	.00623	.003313
7.13		0	.89671	543.1	.00325	.001728
		45	.90969	552.5	.00395	.002100
		90	.89050	550.8	.00571	.003036
8.49		0	.91420	551.5	.00243	.001292
		45	.92775	564.1	.00386	.002052
		90	.93227	565.1	.00364	.001935
9.27		0	.92154	548.5	.00112	.000596
		45	.90969	547.8	.00181	.000962
		90	.92888	552.8	.00081	.000431
10.84		0	.91759	549.1	.00174	.000925
		45	.91815	553.1	.00272	.001446
		90	.90404	543.1	.00221	.001175
11.30		0	.94130	566.8	.00235	.001250
		90	.92380	563.5	.00388	.002063
12.32		0	.95879	576.8	.00221	.001175
		45	.95710	580.8	.00317	.001686
		90	.95146	578.5	.00356	.001893
13.82		0	.93791	571.5	.00287	.001526
		45	.92323	557.8	.00295	.001569
		90	.92098	557.5	.00335	.001781

[a] Radius is listed only for hemispherical heat shield.

[b] Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leq h \leq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VII. - HEAT-TRANSFER MEASUREMENTS ON ESCAPE CONFIGURATION - Continued

(b) M = 4.44 - Continued

x, in.	r, in. (a)	$\alpha = 5^\circ$, Leeward ($T_t = 677.2^\circ$): ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	$\alpha = -5^\circ$, Windward ($T_t = 674.2^\circ$): ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	———	567.8	LOW	LOW	90	.95877	565.1	.00036	.000194
		45	.95587	563.5	.00053	.000283	45	.96668	571.5	.00058	.000313
		90	.94795	559.5	.00054	.000288	0	.96272	568.5	.00052	.000281
-.62	3.86	0	———	565.1	LOW	LOW	90	———	564.5	LOW	LOW
		45	.94569	556.8	.00032	.000171	45	.96046	567.1	.00050	.000270
		90	.94399	556.8	.00045	.000240	0	———	568.5	LOW	LOW
-.11	5.05	0	.93777	556.8	.00114	.000609	90	.93787	559.8	.00132	.000712
		45	.91797	546.1	.00134	.000716	45	.93731	565.5	.00245	.001322
		90	.93041	557.1	.00201	.001073	0	.92827	558.1	.00216	.001165
.45		0	.92815	566.8	.00402	.002147	90	.94013	579.8	.00654	.003528
		45	.90383	552.5	.00453	.002419	45	.93110	584.1	.01103	.005950
		90	.92702	582.8	.00970	.005180	0	.90343	566.5	.01066	.005751
1.69		0	.93041	563.5	.00311	.001661	90	.93449	570.5	.00470	.002535
		45	.89760	542.5	.00318	.001698	45	.90343	559.5	.00805	.004343
		90	.90043	557.8	.00678	.003620	0	.89439	555.5	.00829	.004472
2.93		0	.92306	558.1	.00298	.001591	90	.93336	569.1	.00467	.002519
		45	.90326	546.5	.00332	.001773	45	.89608	555.1	.00787	.004245
		90	.89195	551.8	.00681	.003636	0	.88422	548.5	.00796	.004294
4.36		0	.92759	560.1	.00275	.001468	90	.94860	577.1	.00427	.002303
		45	.91514	554.8	.00345	.001842	45	.89608	554.5	.00748	.004035
		90	.90383	556.8	.00601	.003209	0	.88479	547.8	.00762	.004111
5.78		0	.93211	562.1	.00256	.001367	90	.92658	564.1	.00442	.002384
		45	.91062	552.8	.00347	.001853	45	.88084	544.1	.00699	.003771
		90	.88912	545.8	.00541	.002889	0	.89044	548.5	.00641	.003458
7.13		0	.93890	565.8	.00256	.001367	90	.92263	562.5	.00442	.002384
		45	.91797	557.1	.00361	.001928	45	.88310	545.8	.00724	.003906
		90	.89704	548.1	.00447	.002387	0	.90399	552.1	.00495	.002670
8.49		0	.94343	567.5	.00227	.001212	90	.94691	571.5	.00297	.001602
		45	.93720	567.5	.00304	.001623	45	.90512	553.1	.00482	.002600
		90	.92532	558.5	.00281	.001501	0	.91077	550.8	.00318	.001715
9.27		0	.94682	564.1	.00125	.000667	90	.93562	556.1	.00099	.000534
		45	.92532	552.1	.00140	.000748	45	.88887	532.1	.00174	.000939
		90	.92702	551.1	.00106	.000566	0	.91472	544.8	.00118	.000637
10.84		0	.93890	560.1	.00135	.000721	90	.91585	547.8	.00186	.001003
		45	.92815	555.1	.00185	.000988	45	.89721	541.8	.00308	.001662
		90	.92136	550.8	.00174	.000929	0	.90964	543.8	.00173	.000933
11.30		0	.95644	574.1	.00176	.000940	90	.92940	561.8	.00303	.001035
		90	.93890	565.5	.00232	.001239	0	.93223	562.1	.00255	.001376
12.32		0	.96153	572.8	.00127	.000678	90	.94804	572.1	.00280	.001510
		45	.95417	574.5	.00218	.001164	45	.94691	578.1	.00429	.002314
		90	.95644	576.1	.00231	.001234	0	.94635	568.8	.00222	.001198
13.82		0	.95644	572.8	.00210	.001121	90	.91585	553.1	.00304	.001640
		45	.95474	576.1	.00263	.001404	45	.91754	557.1	.00359	.001937
		90	.95135	574.1	.00288	.001538	0	.95312	576.8	.00287	.001548

[a] Radius is listed only for hemispherical heat shield.

[b] Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leq h \leq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VII. - HEAT-TRANSFER MEASUREMENTS ON ESCAPE CONFIGURATION - Continued

(b) M = 4.44 - Continued

		α = 10°					α = -10°				
		Leeward (T_t = 676.2°)					Windward (T_t = 660.2°)				
x, in.	r, in. (a)	ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	ϕ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	———	566.1	LOW	LOW	90	.95137	560.5	.00040	.000213
		45	.96327	567.8	.00032	.000171	45	.96098	565.8	.00036	.000191
		90	———	569.5	LOW	LOW	0	———	565.8	LOW	LOW
-.62	3.86	0	———	563.5	LOW	LOW	90	———	559.8	LOW	LOW
		45	.95253	561.8	.00035	.000187	45	.95477	562.8	.00042	.000223
		90	———	569.8	LOW	LOW	0	———	564.1	LOW	LOW
-.11	5.05	0	.94010	557.1	.00073	.000389	90	.92989	552.5	.00105	.000558
		45	.92484	553.5	.00173	.000922	45	.93215	561.5	.00233	.001238
		90	.93388	557.1	.00121	.000645	0	.93272	559.1	.00186	.000988
.45		0	.93332	560.8	.00173	.000922	90	.92989	570.5	.00620	.003294
		45	.91693	568.8	.00522	.002783	45	.93215	582.8	.01101	.005850
		90	.92597	573.1	.00495	.002639	0	.92989	581.5	.01081	.005744
1.69		0	.94462	568.1	.00153	.000816	90	.92084	560.5	.00463	.002460
		45	.88981	543.8	.00370	.001973	45	.90840	562.1	.00840	.004463
		90	.93049	569.1	.00369	.001967	0	.92254	573.1	.00917	.004872
2.93		0	.93897	563.1	.00154	.000821	90	.91632	558.5	.00536	.002848
		45	.88359	539.5	.00343	.001829	45	.90162	557.8	.00792	.004208
		90	.92936	569.8	.00399	.002127	0	.91067	566.8	.00972	.005164
4.36		0	.94236	566.1	.00172	.000917	90	.92876	570.1	.00518	.002752
		45	.89490	544.1	.00295	.001573	45	.90162	557.8	.00793	.004213
		90	.93558	576.8	.00474	.002527	0	.90332	563.1	.01026	.005451
5.78		0	.94292	567.1	.00182	.000970	90	.90219	552.8	.00486	.002582
		45	.89546	542.8	.00266	.001418	45	.88918	550.8	.00819	.004352
		90	.89942	557.8	.00551	.002938	0	.88862	553.5	.00984	.005228
7.13		0	.94575	570.1	.00212	.001130	90	.89257	550.1	.00496	.002635
		45	.90902	548.8	.00230	.001226	45	.89201	552.8	.00839	.004458
		90	.88359	547.8	.00550	.002932	0	.88466	550.1	.00936	.004973
8.49		0	.94518	572.8	.00222	.001184	90	.91519	547.8	.00207	.001100
		45	.92767	555.8	.00150	.000800	45	.91293	561.5	.00672	.003570
		90	.91354	555.1	.00282	.001504	0	.91406	560.5	.00588	.003124
9.27		0	.94575	563.8	.00094	.000501	90	.92141	544.5	.00064	.000340
		45	.91128	543.1	.00111	.000592	45	.89710	539.1	.00257	.001365
		90	.91919	547.1	.00084	.000448	0	.91180	545.5	.00196	.001041
10.84		0	.94349	563.1	.00123	.000656	90	.89710	534.1	.00150	.000797
		45	.90846	542.1	.00132	.000704	45	.90105	545.1	.00394	.002093
		90	.89942	541.8	.00205	.001093	0	.89653	540.1	.00285	.001514
11.30		0	.95988	577.8	.00164	.000874	90	.90614	546.8	.00250	.001328
		90	.91015	556.8	.00291	.001552	0	.92141	563.5	.00494	.002625
12.32		0	.95649	572.1	.00126	.000672	90	.92706	556.5	.00251	.001334
		45	.93727	561.5	.00129	.000688	45	.93611	577.1	.00653	.003470
		90	.92823	569.1	.00283	.001509	0	.94742	574.1	.00368	.001955
13.82		0	.95988	581.8	.00229	.001221	90	.92310	563.1	.00476	.002529
		45	.94066	568.1	.00219	.001168	45	.90388	549.8	.00444	.002359
		90	.93388	565.8	.00259	.001381	0	.94685	570.5	.00283	.001504

[a]Radius is listed only for hemispherical heat shield.

[b]Accuracy depends on magnitude: h > 0.015, accuracy 10 percent; 0.001 ≦ h ≦ 0.015, accuracy 15 percent; h < 0.001, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

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TABLE VII. - HEAT-TRANSFER MEASUREMENTS ON ESCAPE CONFIGURATION - Concluded

(b) M = 4.44 - Concluded

		$\alpha = 15^{\circ}$					$\alpha = -15^{\circ}$				
		Leeward (T_t = 682.5°)					Windward (T_t = 664.8°)				
x, in.	r, in. (a)	φ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}	φ, deg	T_e/T_t	T_w, deg	h (b)	N_{St}
-.98	2.66	0	——	555.5	LOW	LOW	90	.94525	557.1	.00030	.000159
		45	——	558.8	LOW	LOW	45	.95992	566.1	.00031	.000165
		90	——	558.1	LOW	LOW	0	——	567.1	LOW	LOW
-.62	3.86	0	——	553.1	LOW	LOW	90	——	555.8	LOW	LOW
		45	——	555.5	LOW	LOW	45	——	562.1	LOW	LOW
		90	——	558.5	LOW	LOW	0	——	564.1	LOW	LOW
-.11	5.05	0	.92779	551.5	.00069	.000370	90	.91477	546.1	.00128	.000680
		45	.91143	543.8	.00109	.000584	45	.92436	560.5	.00315	.001673
		90	.92441	552.8	.00138	.000740	0	.93114	562.8	.00251	.001333
.45		0	.92384	558.1	.00179	.000959	90	.91477	562.8	.00722	.003834
		45	.89169	547.5	.00292	.001565	45	.93339	590.8	.01642	.008719
		90	.93118	581.1	.00466	.002498	0	.93904	591.1	.01426	.007572
1.69		0	.93005	562.8	.00173	.000927	90	.91138	556.5	.00531	.002820
		45	.87589	529.8	.00204	.001093	45	.91420	572.8	.01257	.006674
		90	.92723	575.8	.00429	.002299	0	.93565	587.5	.01352	.007179
2.93		0	.91933	556.1	.00214	.001147	90	.90630	552.8	.00532	.002825
		45	.86969	525.1	.00204	.001093	45	.90743	569.1	.01241	.006589
		90	.91200	565.8	.00497	.002664	0	.92323	580.1	.01401	.007439
4.36		0	.91764	556.5	.00219	.001174	90	.91928	560.1	.00505	.002681
		45	.87307	527.1	.00156	.000836	45	.90461	567.5	.01240	.006584
		90	.92159	568.1	.00420	.002251	0	.91477	575.8	.01471	.007811
5.78		0	.91538	555.5	.00223	.001195	90	.89947	548.5	.00492	.002612
		45	.87025	523.8	.00139	.000745	45	.88140	553.1	.01255	.006664
		90	.90353	556.8	.00391	.002096	0	.89501	563.8	.01495	.007938
7.13		0	.92328	559.5	.00213	.001142	90	.89270	543.8	.00474	.002517
		45	.88774	533.8	.00151	.000809	45	.87632	546.1	.01106	.005873
		90	.90015	554.8	.00396	.002123	0	.88197	555.8	.01458	.007742
8.49		0	.92666	563.5	.00197	.001056	90	.90122	544.1	.00320	.001699
		45	.93061	555.5	.00098	.000525	45	.88874	549.5	.00853	.004529
		90	.90297	550.1	.00230	.001233	0	.90404	560.8	.00880	.004673
9.27		0	.93174	555.5	.00081	.000434	90	.90179	538.5	.00119	.000632
		45	——	——	——	——	45	.87180	533.5	.00343	.001821
		90	.91594	546.5	.00090	.000482	0	.89834	541.8	.00291	.001545
10.84		0	.93287	556.1	.00087	.000466	90	.89665	536.5	.00188	.000998
		45	.91312	543.1	.00088	.000472	45	.87357	532.8	.00532	.002825
		90	.90297	545.8	.00222	.001190	0	.88705	539.8	.00456	.002421
11.30		0	.94866	568.1	.00108	.000579	90	.90969	551.8	.00303	.001609
		90	.91369	563.8	.00236	.001265	0	.91533	566.5	.00826	.004386
12.32		0	.94076	561.5	.00090	.000482	90	.91477	555.1	.00362	.001922
		45	.92666	559.1	.00141	.000756	45	.93339	586.1	.01165	.006186
		90	.92892	572.1	.00262	.001404	0	.94750	587.5	.00501	.002660
13.82		0	.93230	565.1	.00213	.001142	90	.89439	550.8	.00614	.003260
		45	.90748	549.1	.00202	.001083	45	.87914	538.1	.00570	.003027
		90	.93230	566.5	.00252	.001351	0	.95089	580.5	.00596	.003165

[a]Radius is listed only for hemispherical heat shield.

[b]Accuracy depends on magnitude: $h > 0.015$, accuracy 10 percent; $0.001 \leq h \leq 0.015$, accuracy 15 percent; $h < 0.001$, accuracy 20 percent. (h measured in Btu/sq ft-sec-°R.)

L-1022

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L-1022

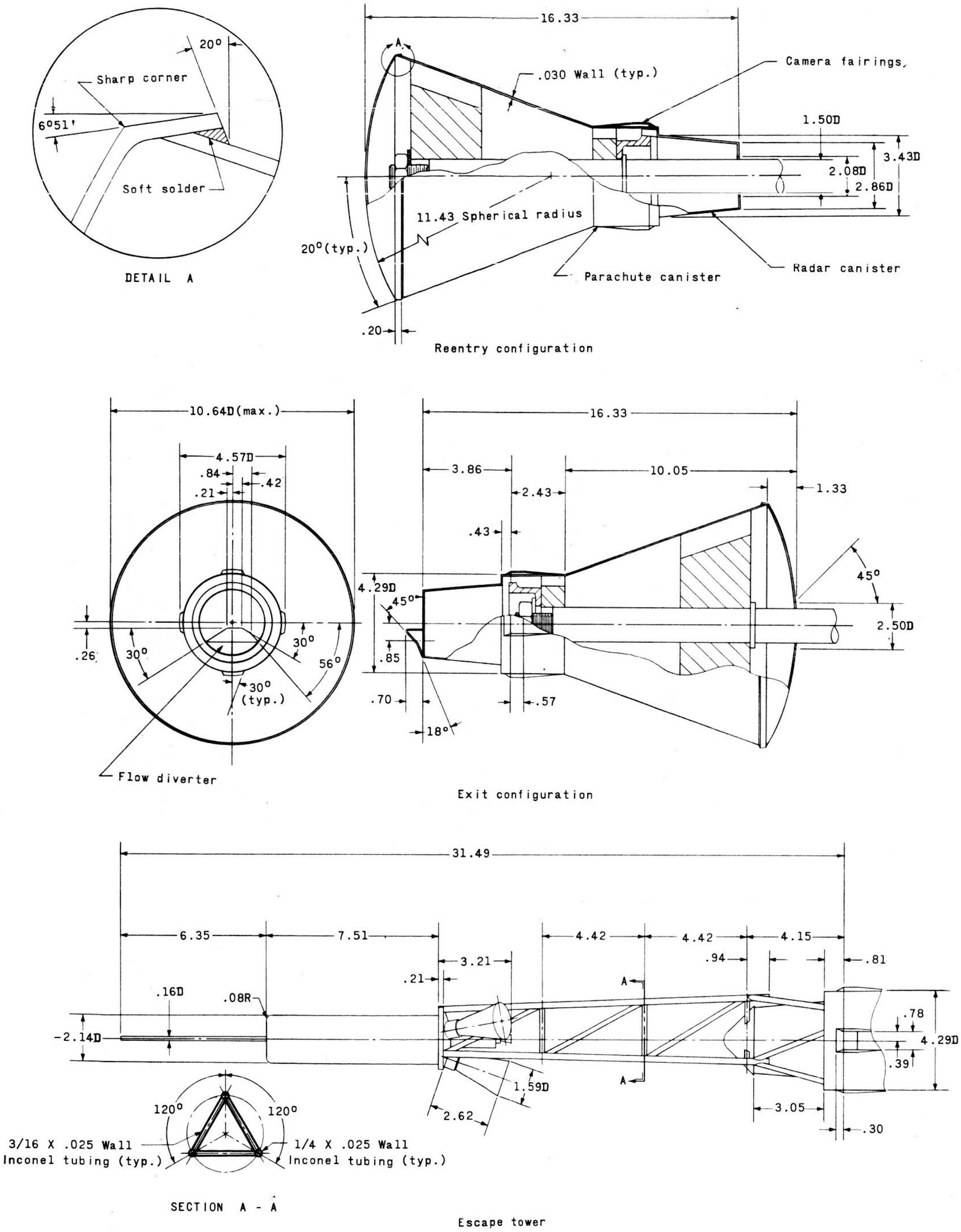

Figure 1.- Drawing of reentry and exit configurations and escape tower of 1/7-scale model of Mercury capsule. All dimensions are in inches unless otherwise noted.

[redacted]

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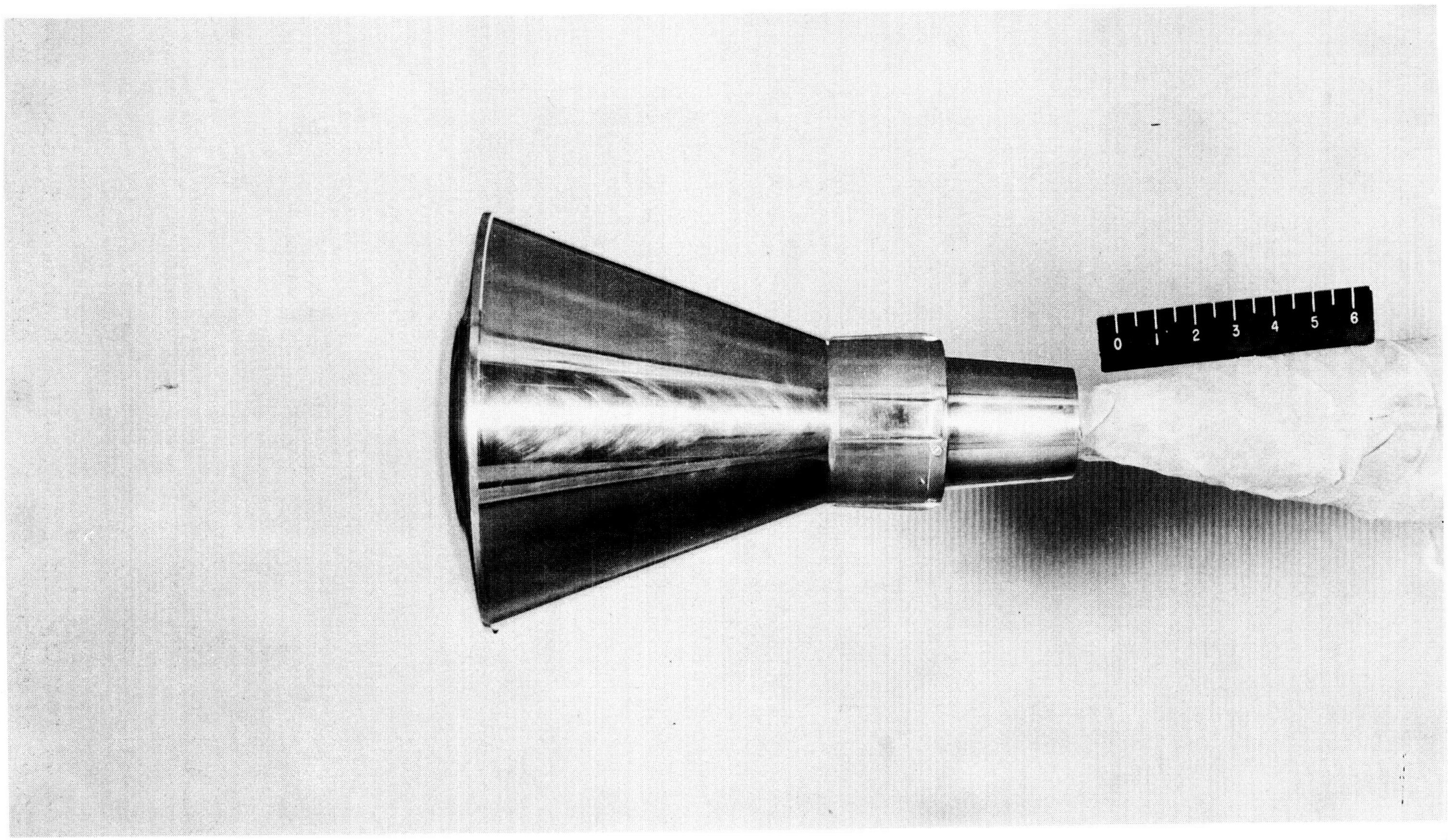
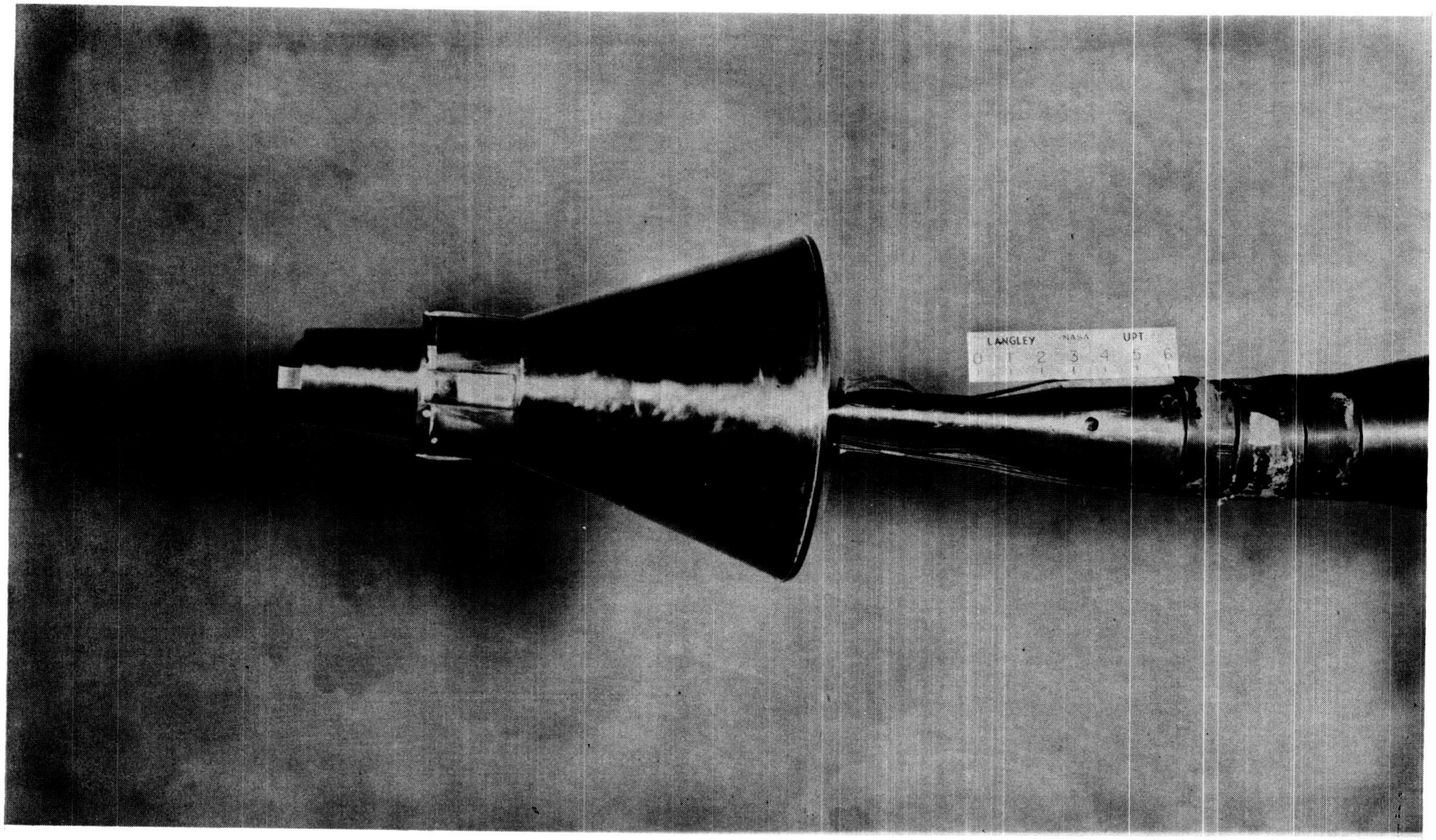


(a) Reentry configuration.   L-59-3730

Figure 2.- Photographs of model of Mercury capsule.

[redacted]



(b) Exit configuration. L-59-3876

Figure 2.- Continued.

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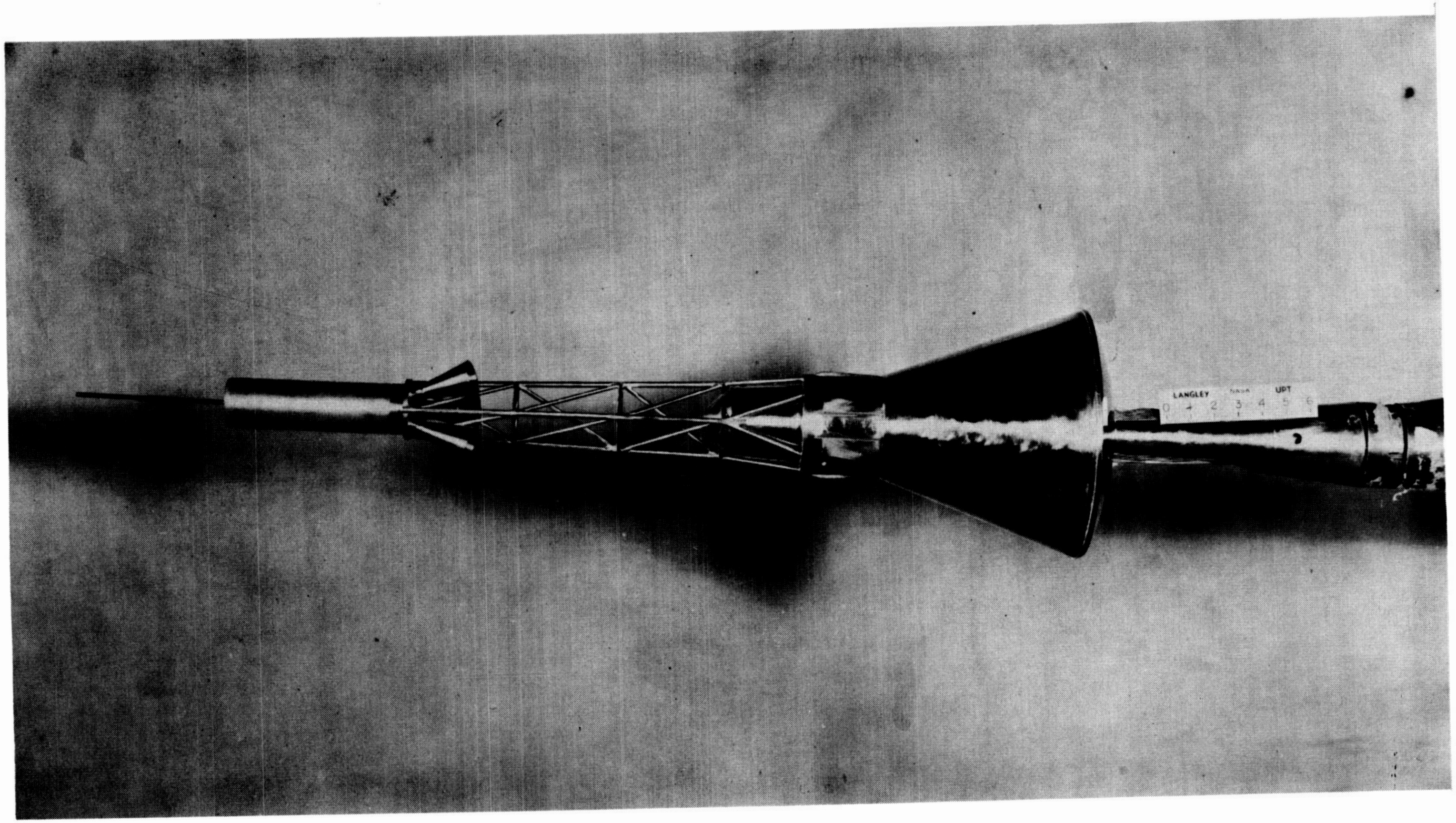
[redacted]



(c) Escape configuration. L-59-3874

Figure 2.- Concluded.

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Thermo-couple	Orifice	x, in.	r, in.	Thermo-couple	Orifice	x, in.	r, in.	Thermo-couple	Orifice	x, in.	r, in.
1	1	-0.98	2.66	17	17	-0.98	2.66	33	33	-1.28	0.53
2	2	-0.62	3.86	18	18	-0.62	3.86	34	34	-0.98	2.66
3	3	-0.11	5.05	19	19	-0.11	5.05	35	35	-0.62	3.86
4	4	0.45	5.16	20	20	0.45	5.16	36	36	-0.11	5.05
5	5	1.69	4.71	21	21	1.69	4.71	37	37	0.45	5.16
6	6	2.93	4.25	22	22	2.93	4.25	38	38	1.69	4.71
7	7	4.36	3.74	23	23	4.36	3.74	39	39	2.93	4.25
8	8	5.78	3.22	24	24	5.78	3.22	40	40	4.36	3.74
9	9	7.13	2.73	25	25	7.13	2.73	41	41	5.78	3.22
10	10	8.49	2.23	26	26	8.49	2.23	42	42	7.13	2.73
11	11	9.27	2.17	27	27	9.27	2.17	43	43	8.49	2.23
12	12	10.84	2.28	28	28	10.84	2.28	44	44	9.27	2.17
13	13	11.30	2.21	29	29	11.30	2.21	45	45	10.84	2.28
14	14	11.59	1.90	30	30	11.59	1.90	46	46	11.30	2.21
15	15	12.32	1.65	31	31	12.32	1.65	47	47	11.59	1.90
16	16	13.82	1.53	32	32	13.82	1.53	48	48	12.32	1.65
								49	49	13.82	1.53
								50		15.02	1.15
								51		15.02	1.15
								52		15.02	1.15
								53		15.36	0.26
								54		15.51	0.54
								55		15.12	1.13

× Location of thermocouples
● Location of orifices

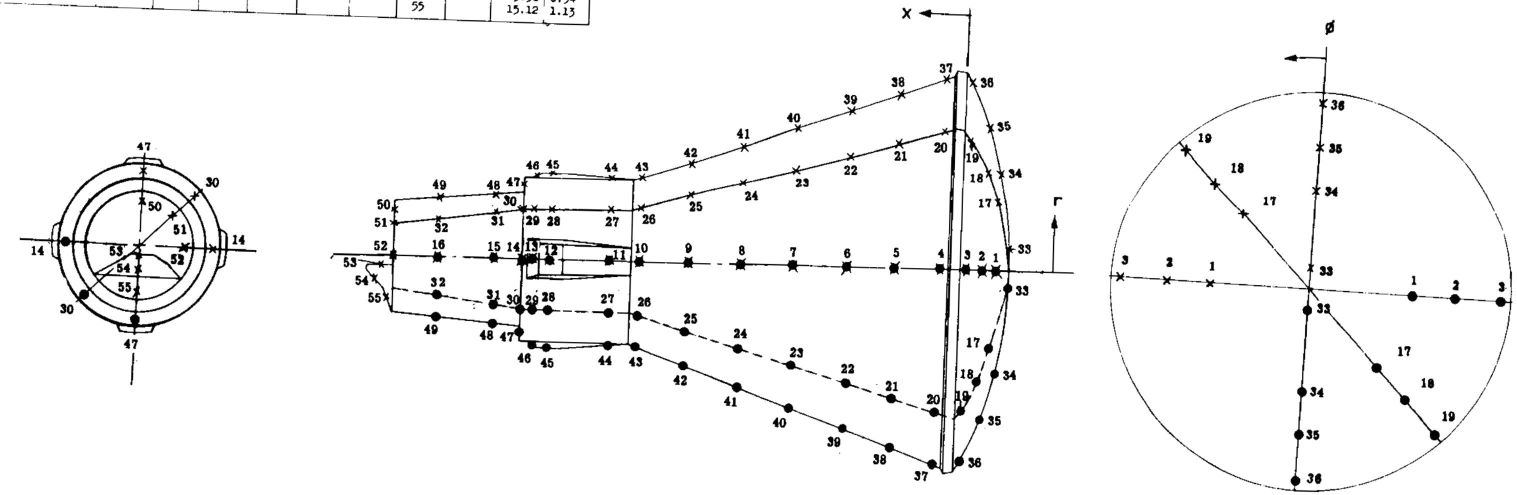

Figure 3.- Location of pressure orifices and heat-transfer thermocouples on 1/7-scale model of Mercury capsule.

[redacted]

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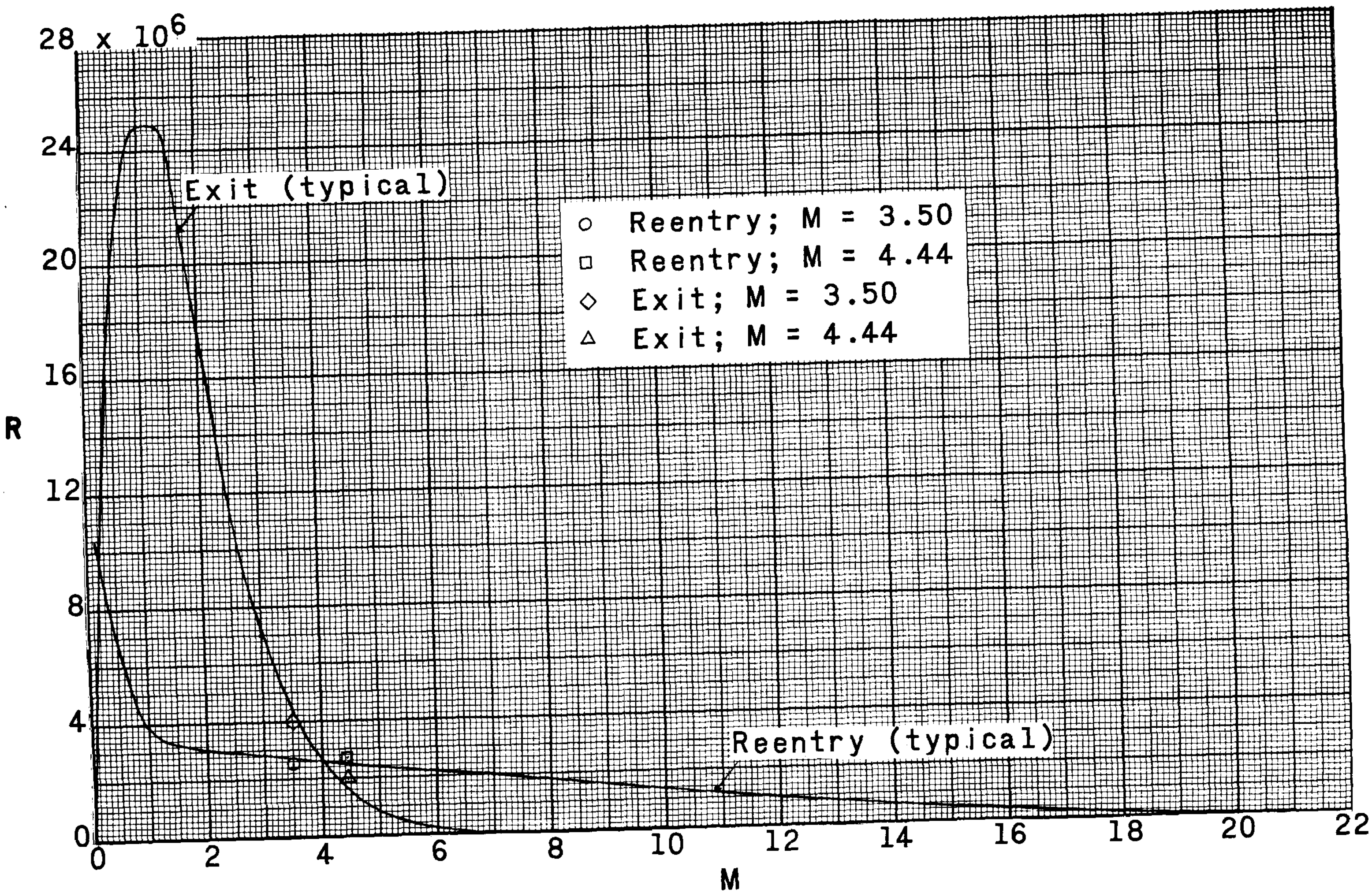

Figure 4.- Typical Mercury capsule trajectory and tunnel test conditions.

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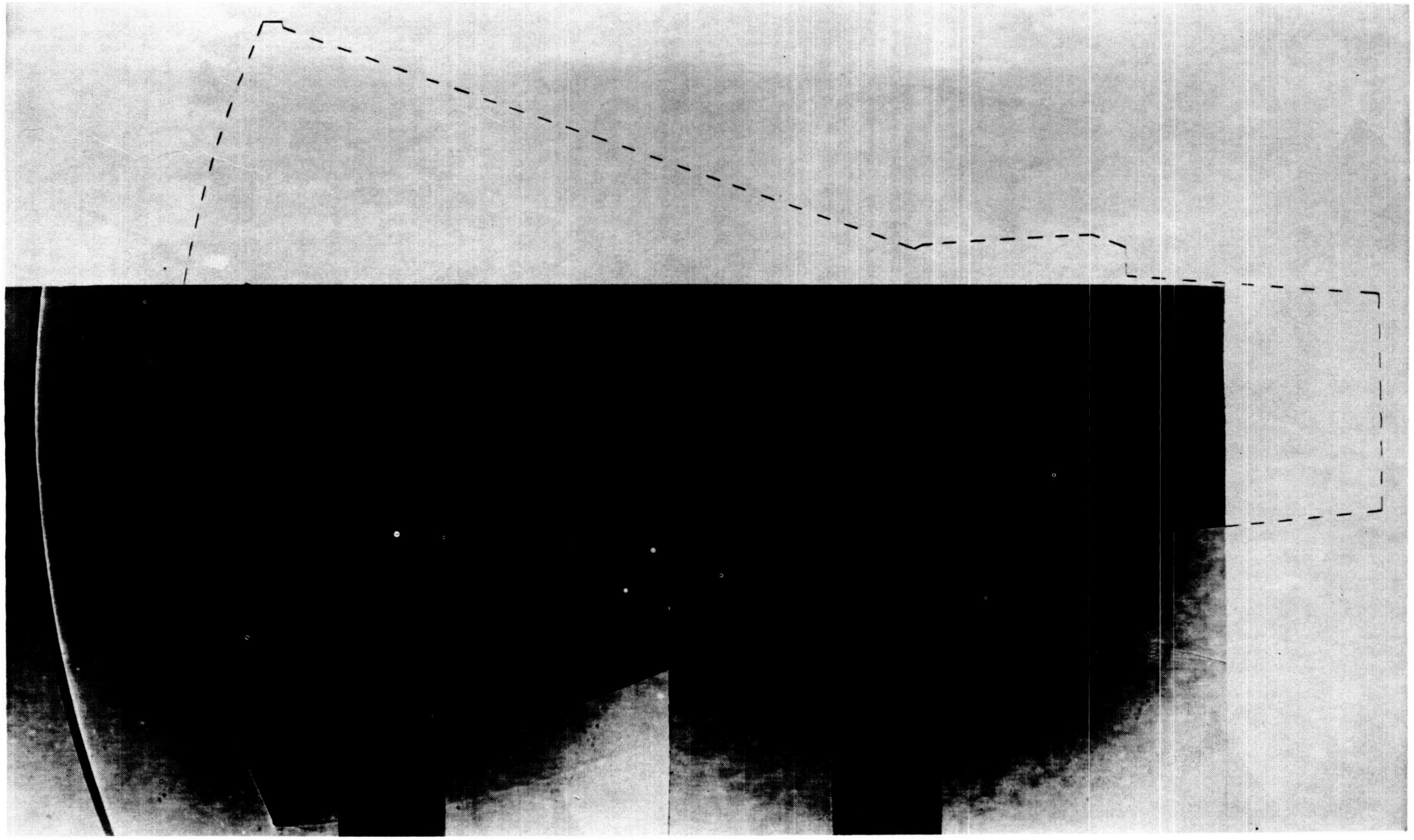

(a) Reentry configuration; M = 3.50; $\alpha = 0^{\circ}$.   L-61-62

Figure 5.- Shadowgraphs of Mercury capsule model.

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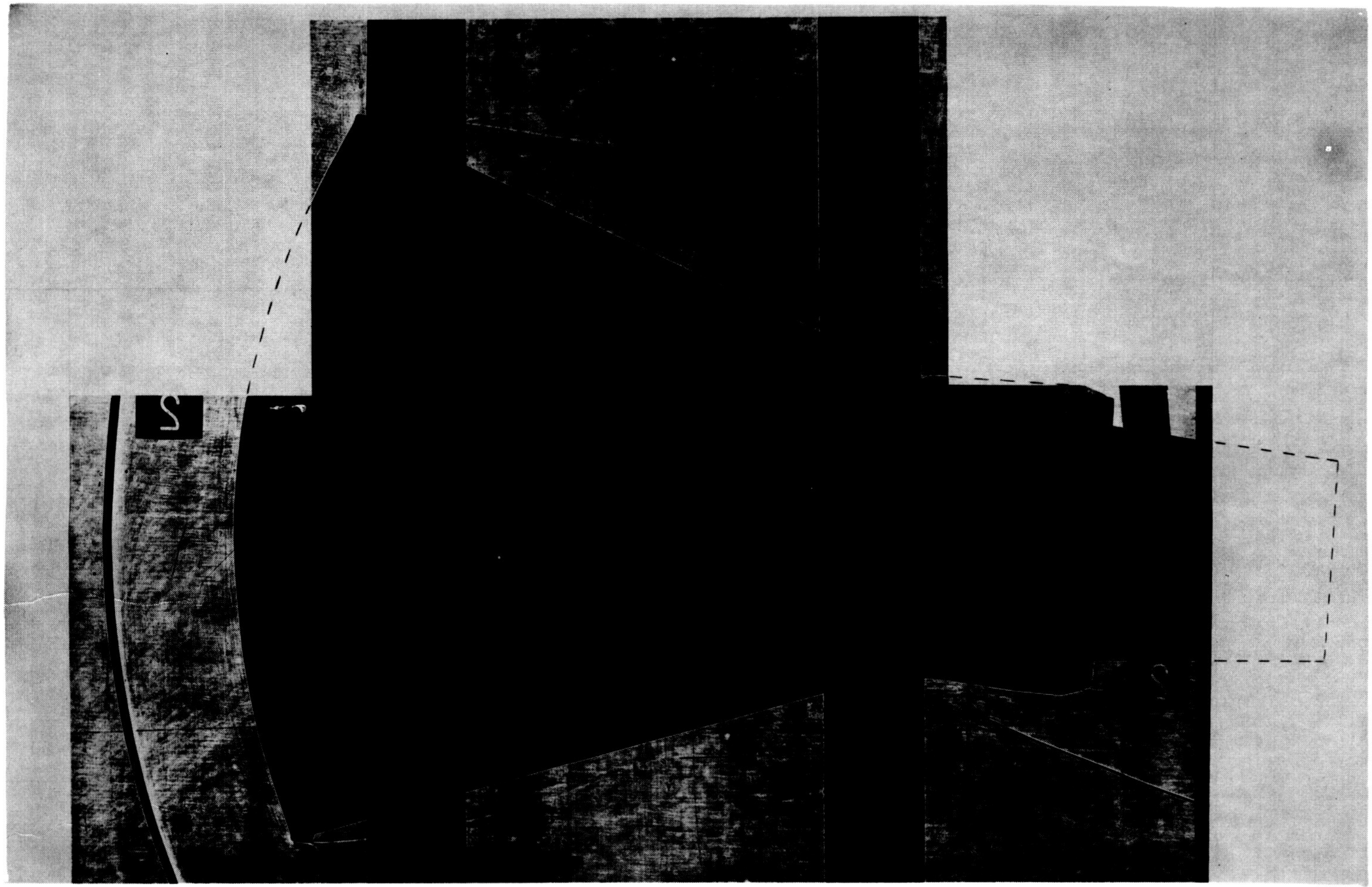
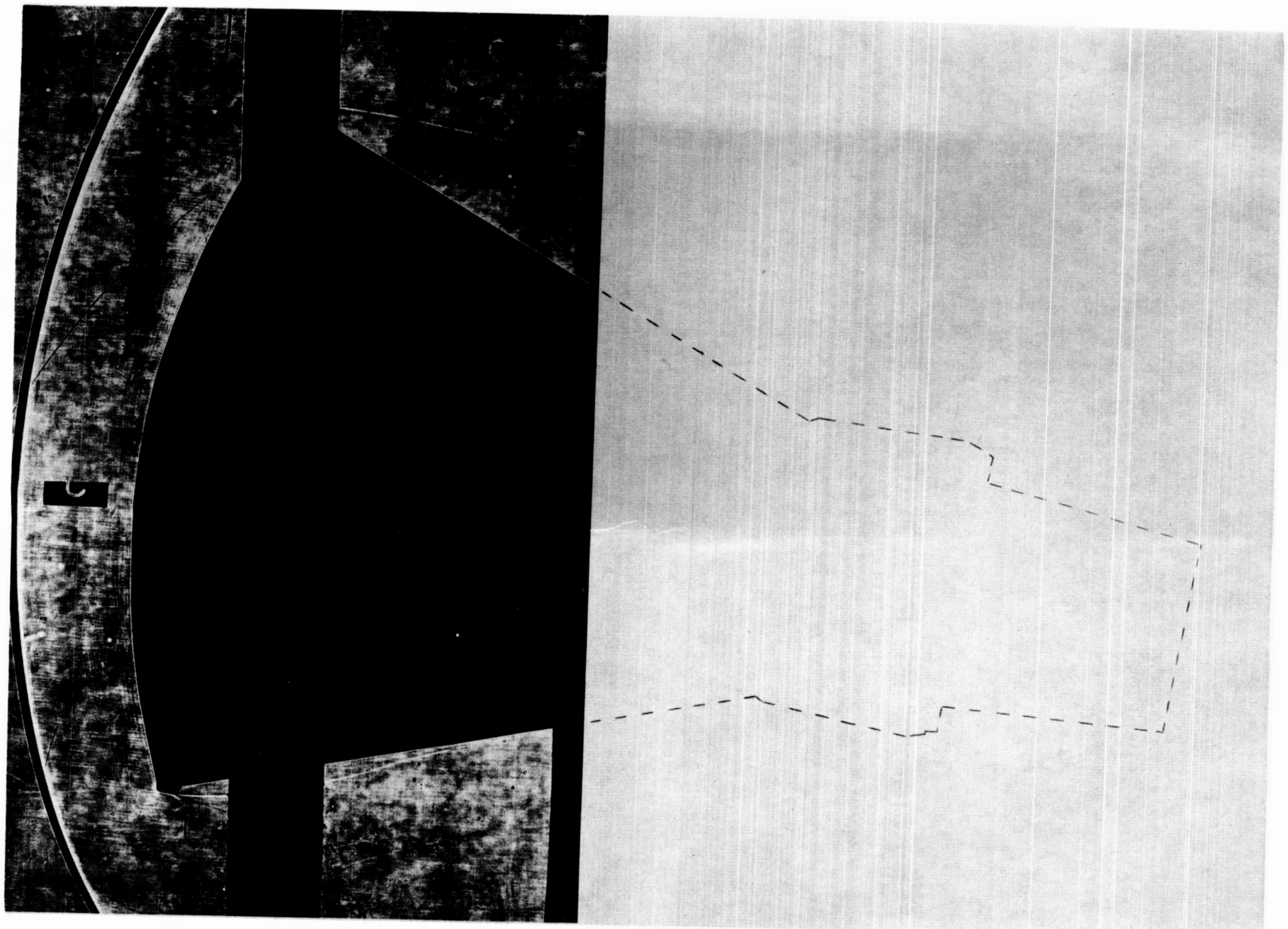


(b) Reentry configuration; M = 3.50; $\alpha = 5^{\circ}$.   L-61-63

Figure 5.- Continued.

[redacted]

[redacted]

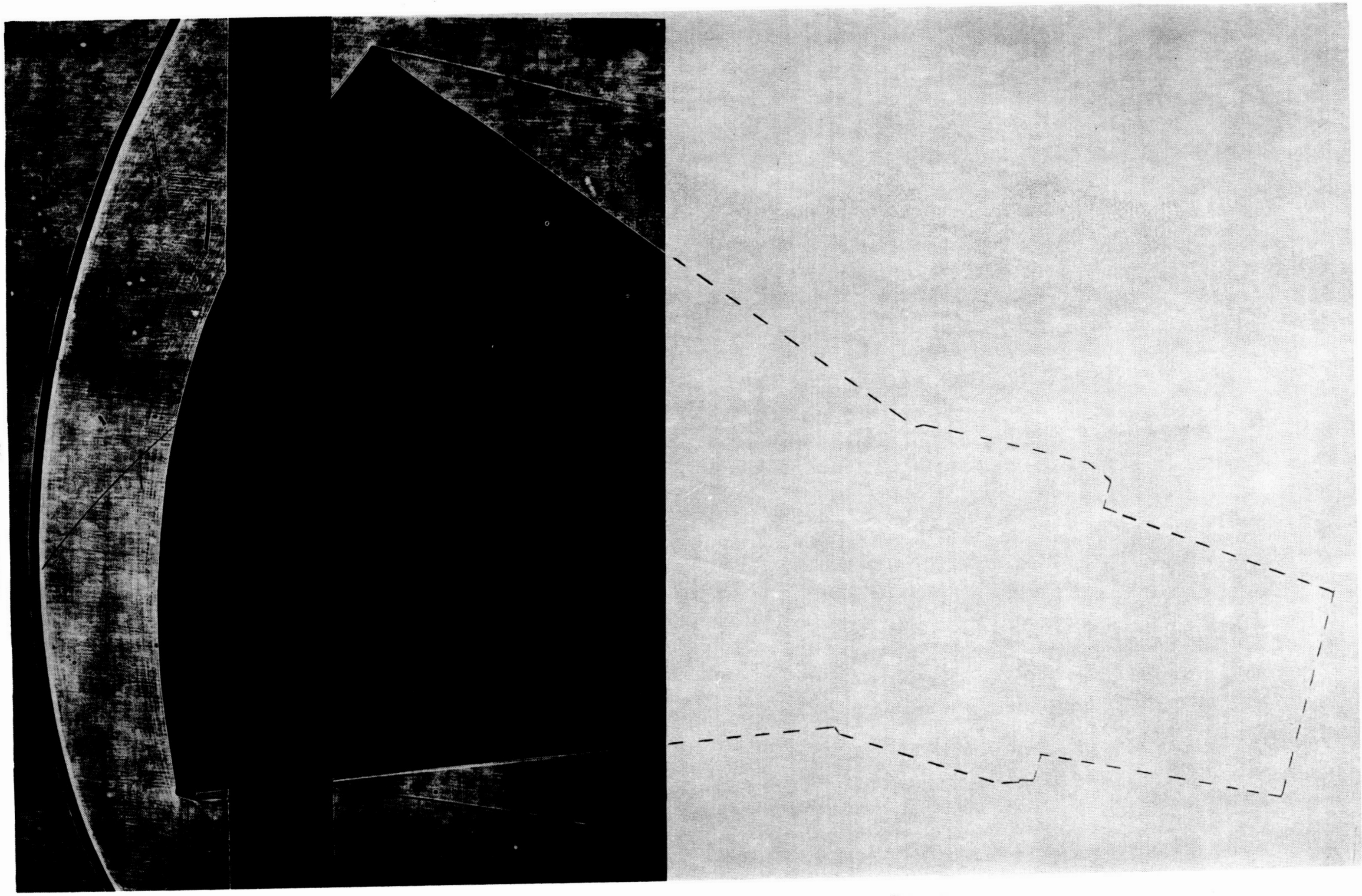


(c) Reentry configuration; $M = 3.50$; $\alpha = 10^{\circ}$. L-61-64

Figure 5.- Continued.

[redacted]

[redacted]



(d) Reentry configuration; $M = 3.50$; $\alpha = 15^{\circ}$. L-61-65

Figure 5.- Continued.

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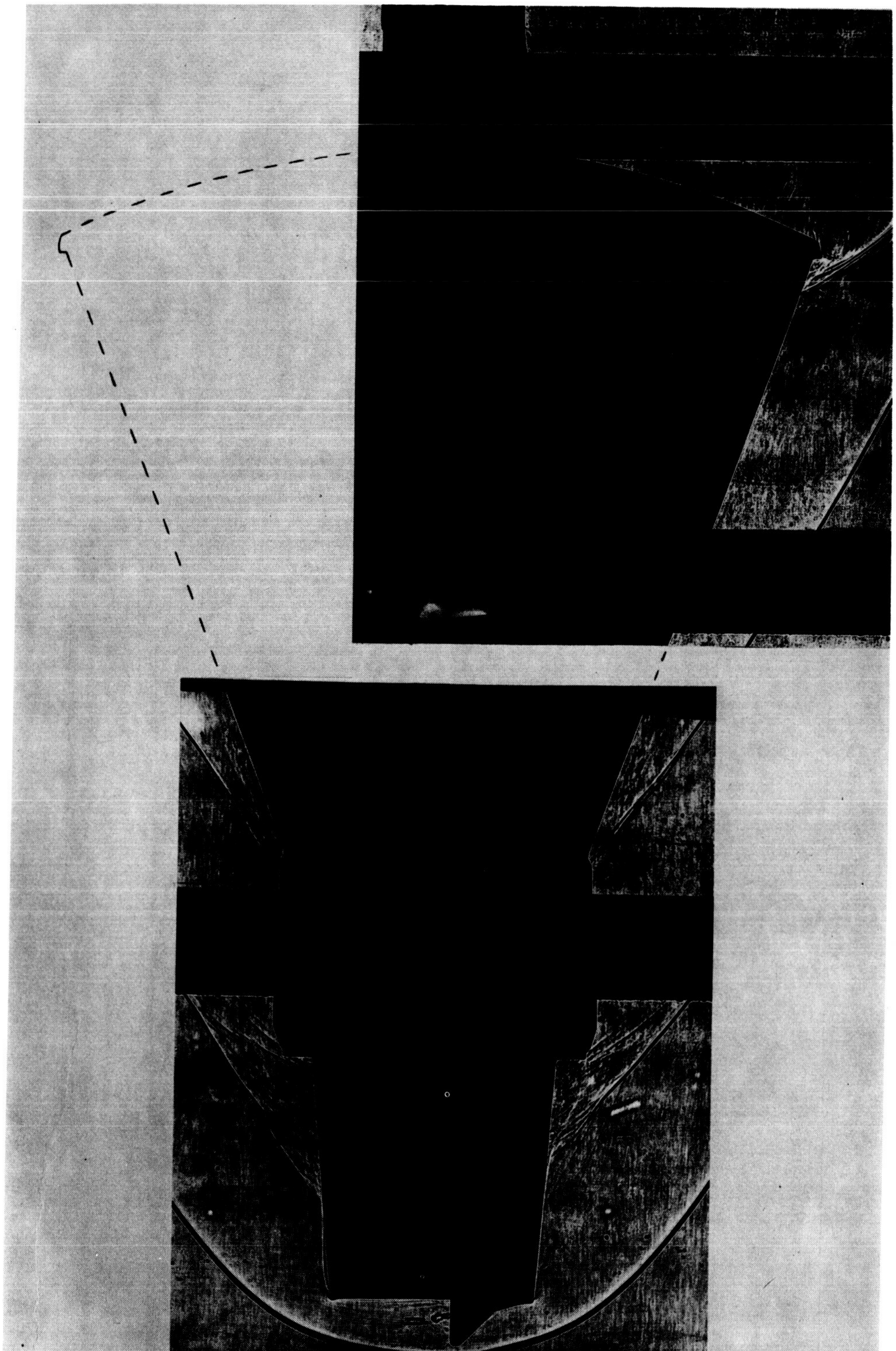
L-1022



(e) Exit configuration; M = 3.50; $\alpha = 0^{\circ}$. L-61-66

Figure 5.- Continued.

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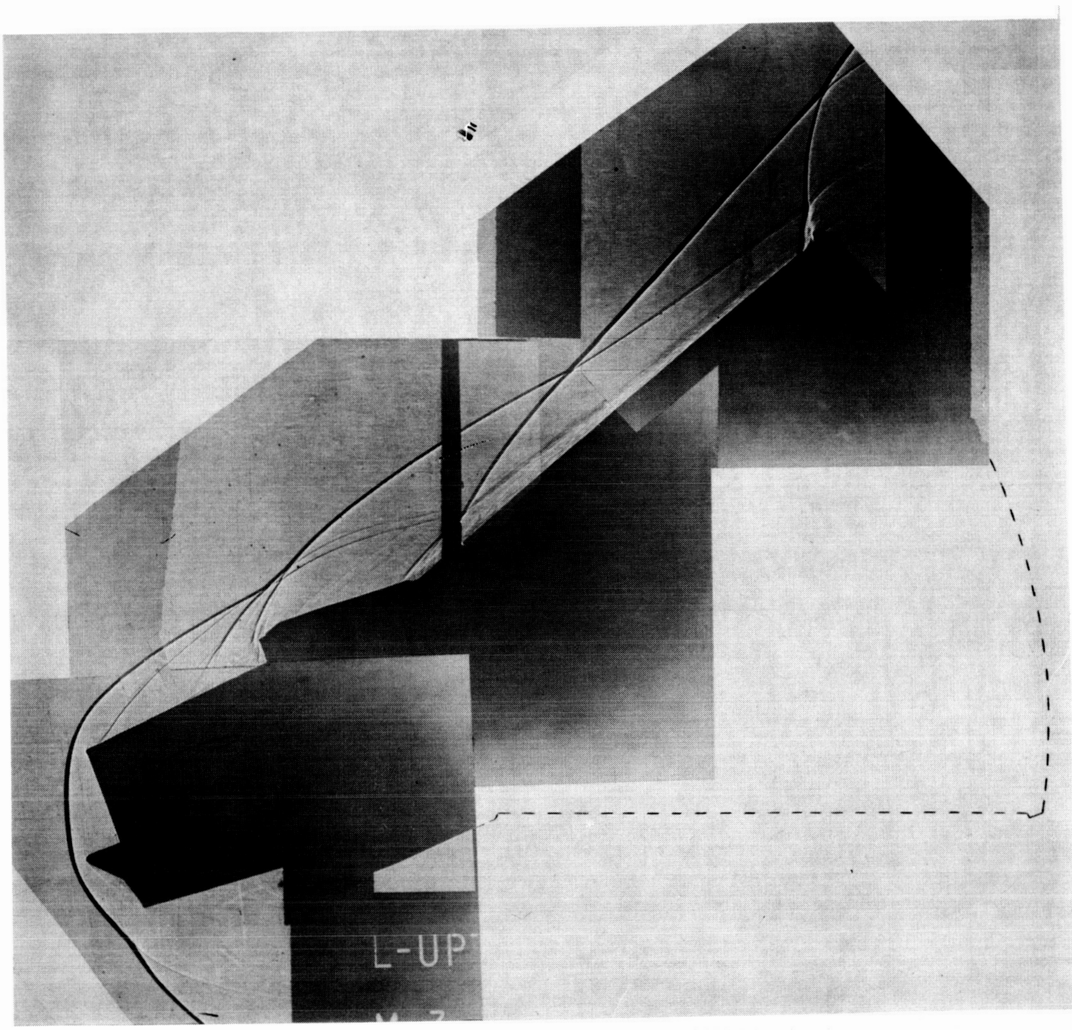
L-1022

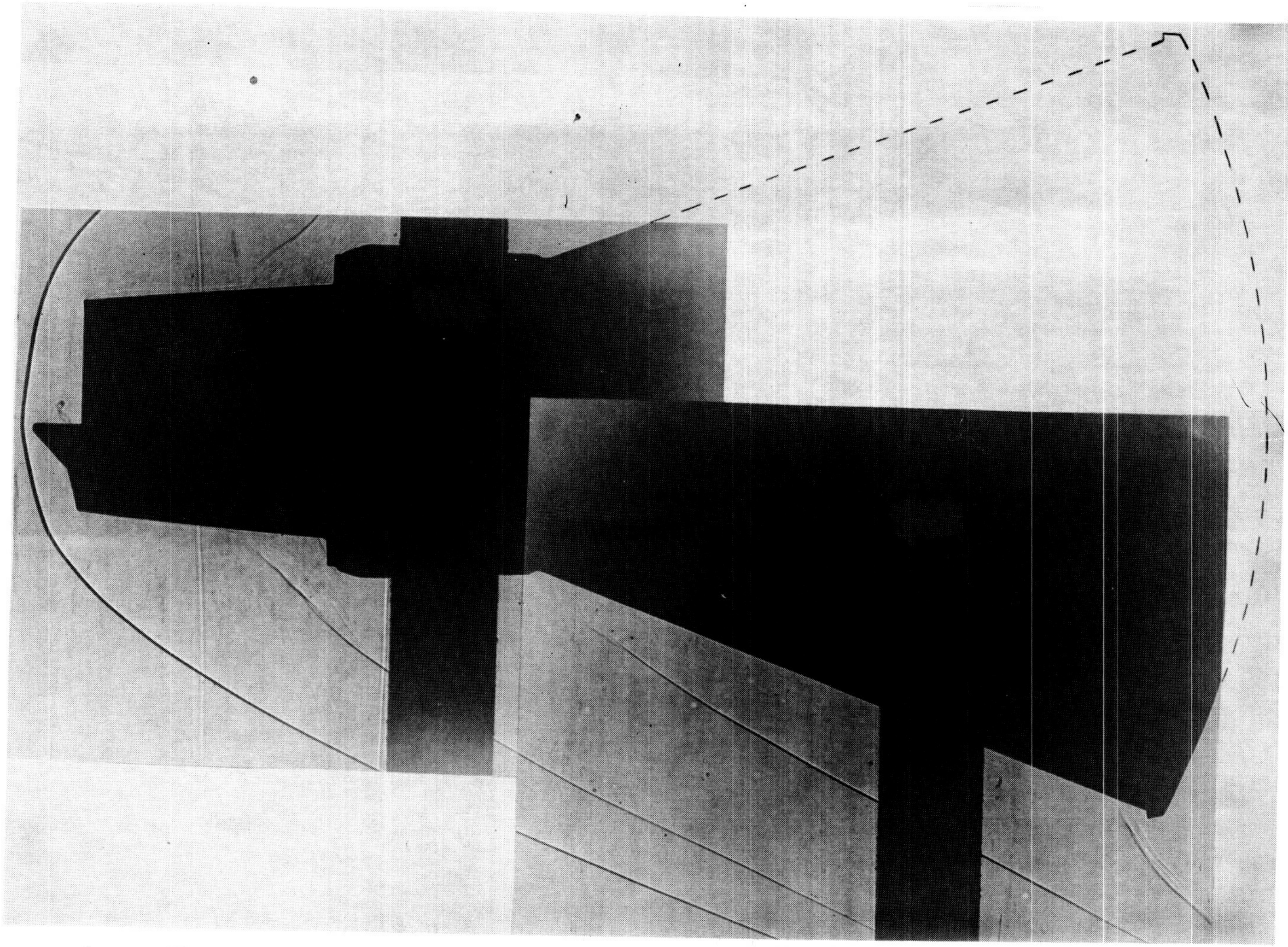


(f) Exit configuration; M = 3.50; $\alpha = -20^{\circ}$. L-61-67

Figure 5.- Continued.

[redacted]

[redacted]

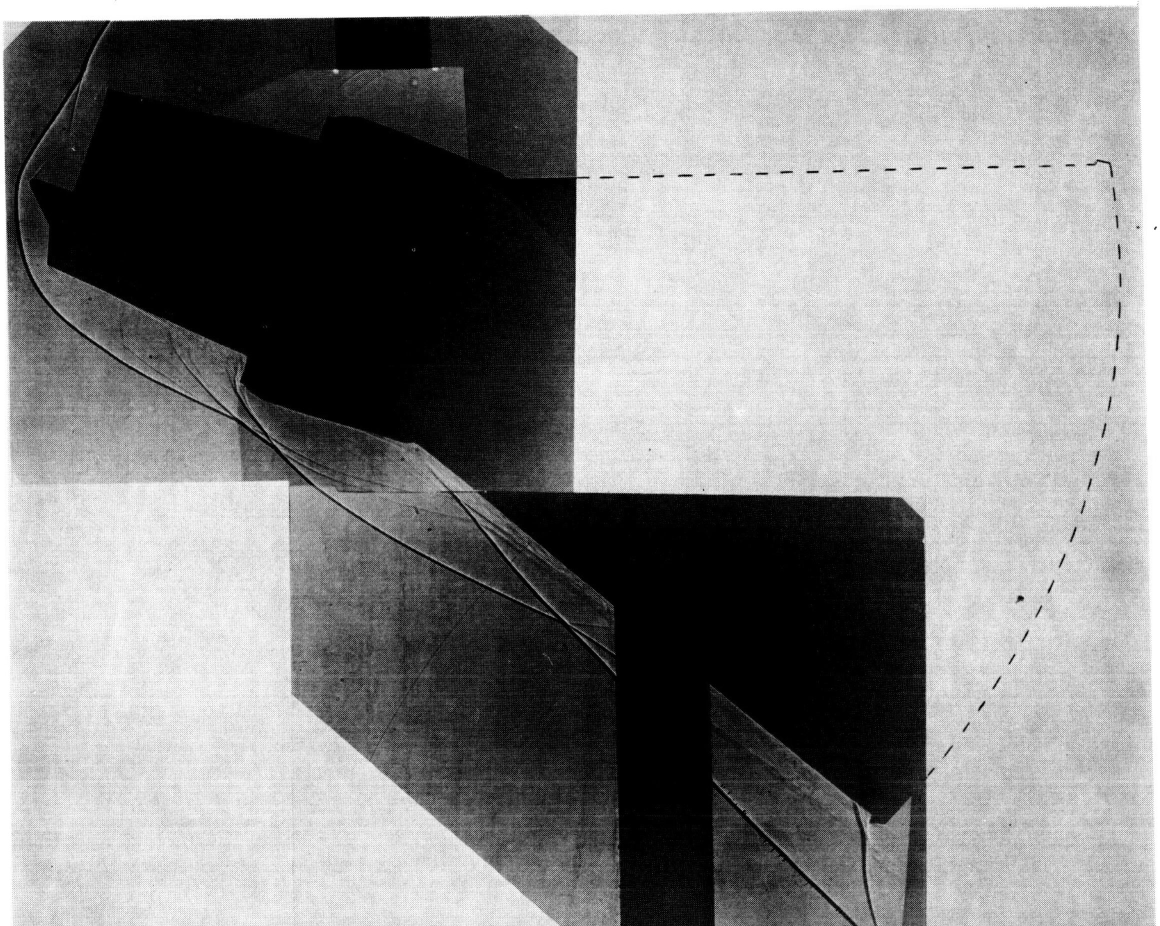


(g) Exit configuration; $M = 4.44$; $\alpha = 0^{\circ}$. L-61-68

Figure 5.- Continued.

[redacted]

[redacted]



(h) Exit configuration; $M = 4.44$; $\alpha = 20^{\circ}$. L-61-69

Figure 5.- Continued.

[redacted]

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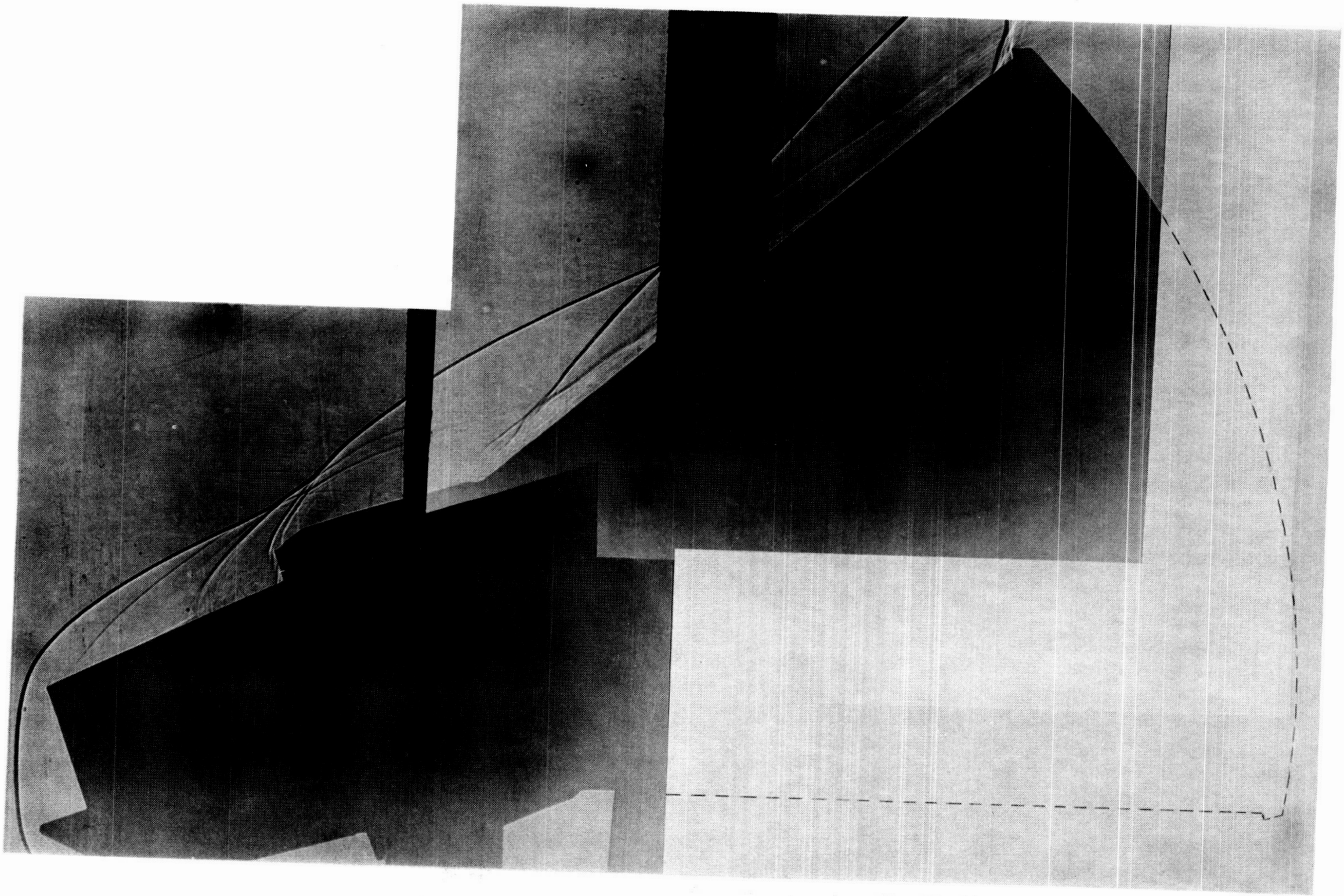

(i) Exit configuration; M = 4.44; α = -20°. L-61-70

Figure 5.- Continued.

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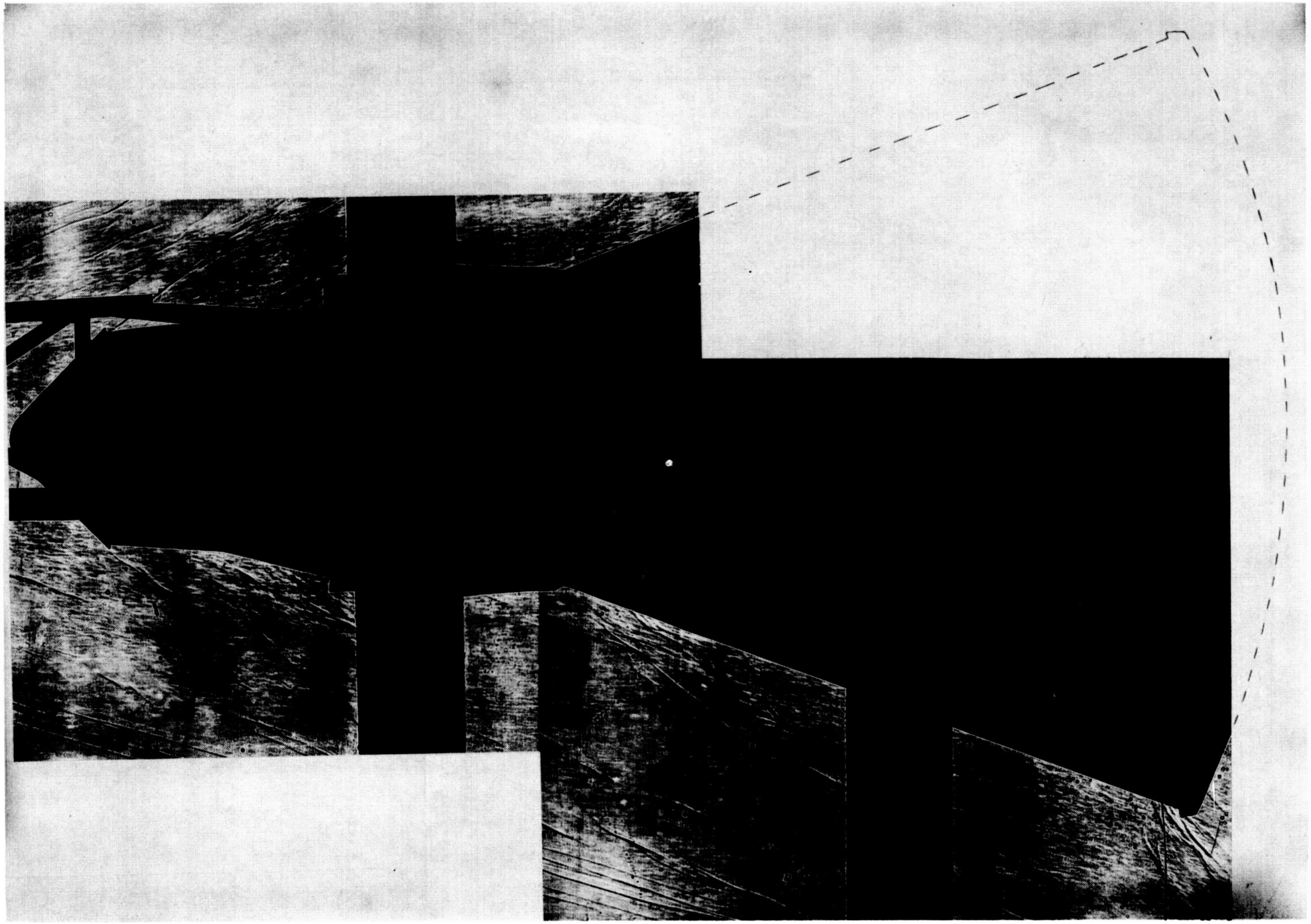
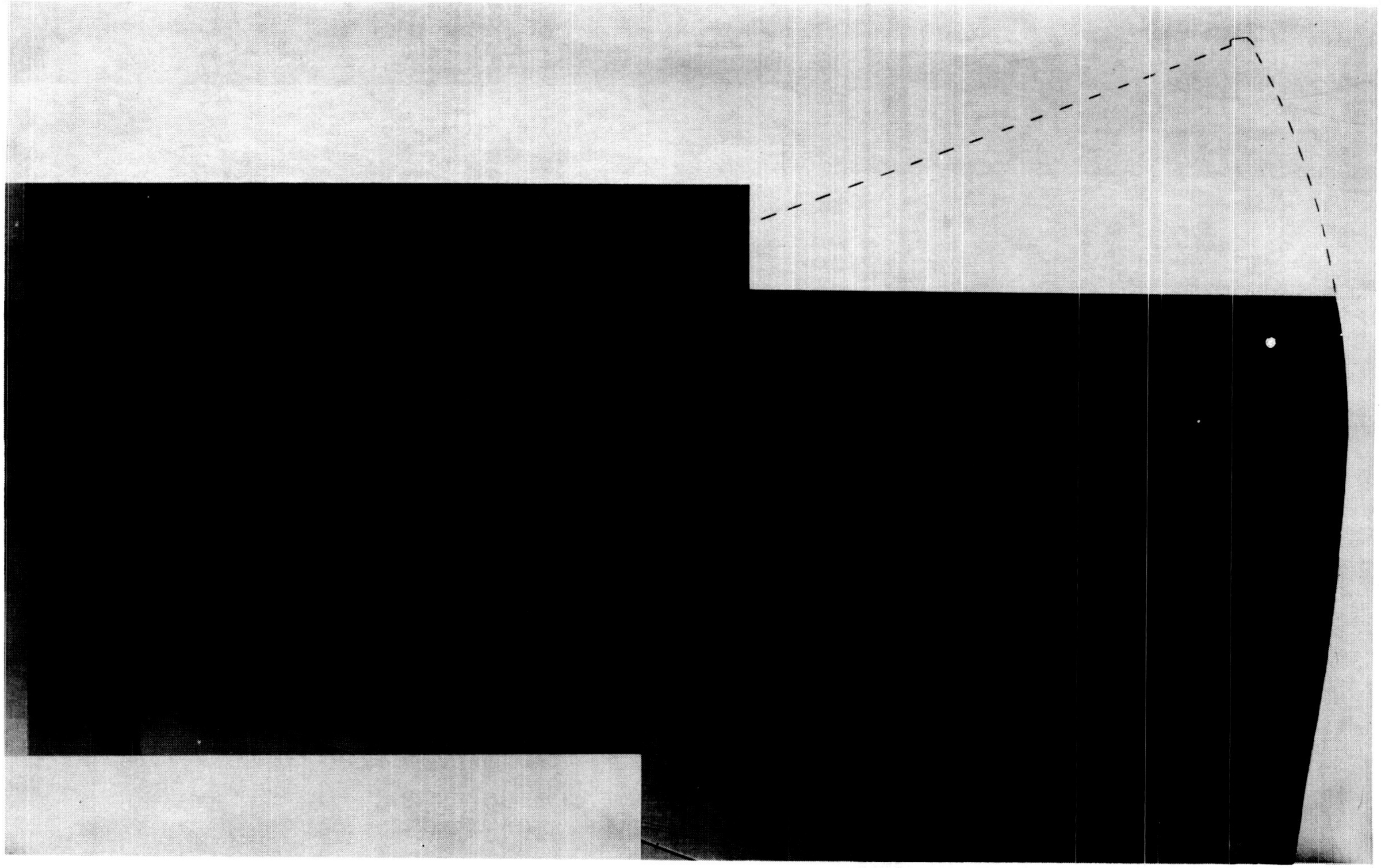


(j) Escape configuration; $M = 3.50$; $\alpha = 0^{\circ}$. L-61-71

Figure 5.- Continued.

[redacted]

[redacted]



(k) Escape configuration; M = 4.44; $\alpha = 0^{\circ}$. L-61-72

Figure 5.- Concluded.

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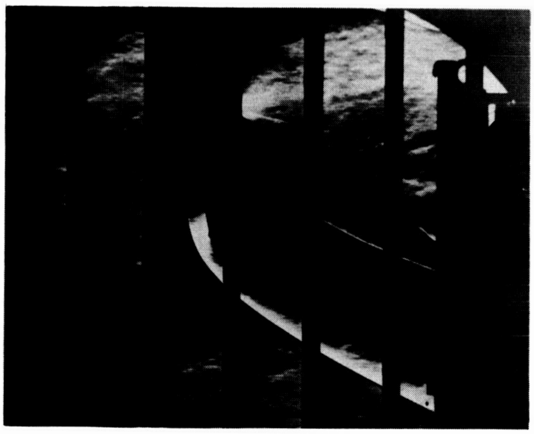
L-1022

α = 0°



α = 10°

α = 15°

(a) Reentry configuration; M = 3.50. L-61-73

Figure 6.- Schlieren photographs of Mercury capsule model.

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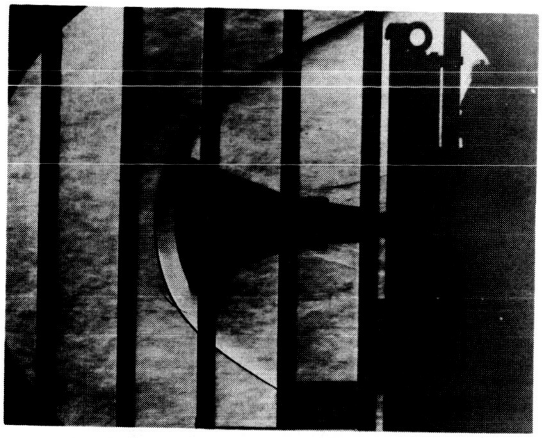
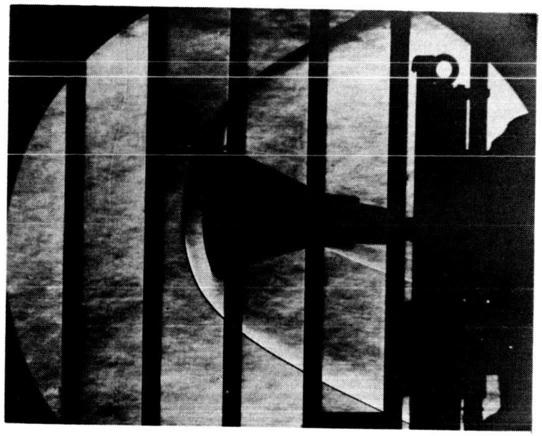
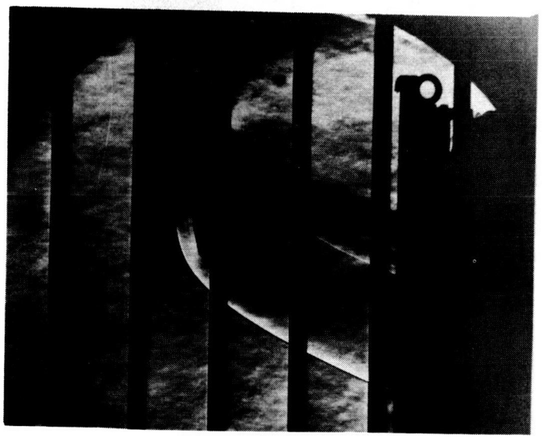
L-1022



α = 0°



α = 5°



α = 10°

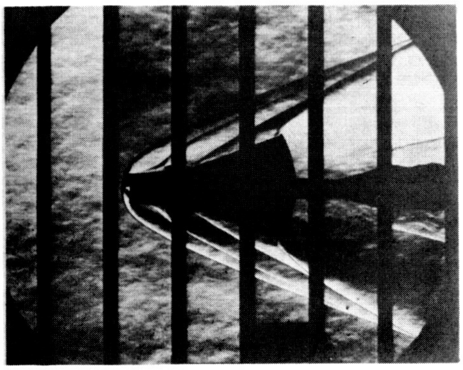
α = 15°

(b) Reentry configuration; M = 4.44. L-61-74

Figure 6.- Continued.

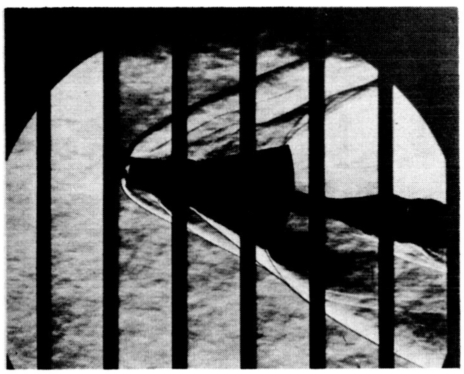
[redacted]

[redacted]

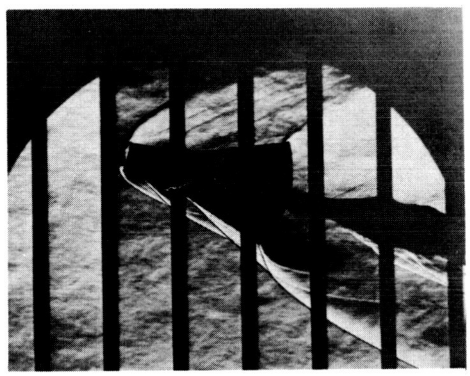


α = 0°

α = 5°



α = 10°



α = 15°

α = 20°

(c) Exit configuration; M = 3.50. L-61-75

Figure 6.- Continued.

L-1022

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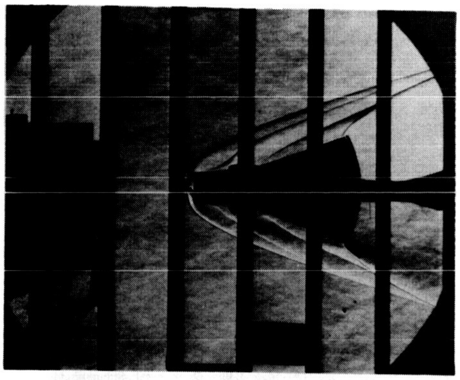
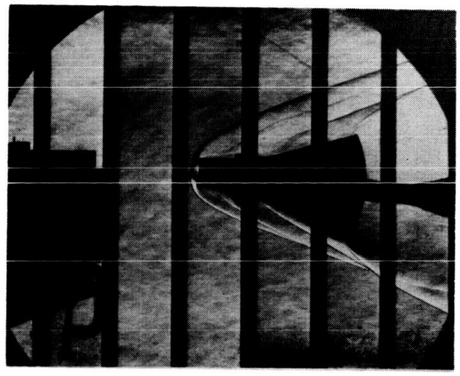
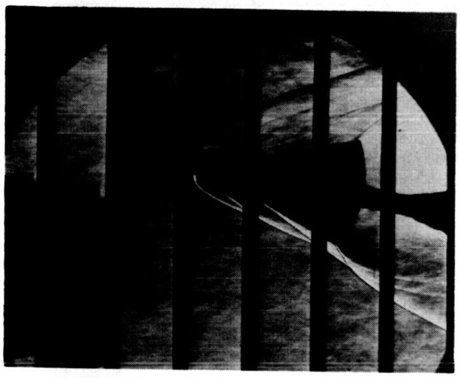
L-1022



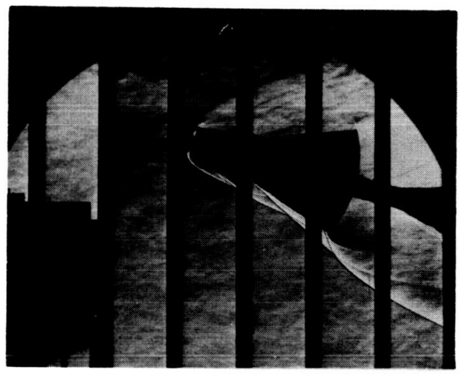
α = 0°



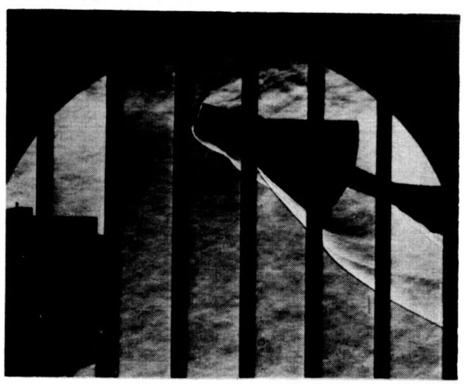
α = 5°



α = 10°



α = 15°



α = 20°

(d) Exit configuration; M = 4.44. L-61-76

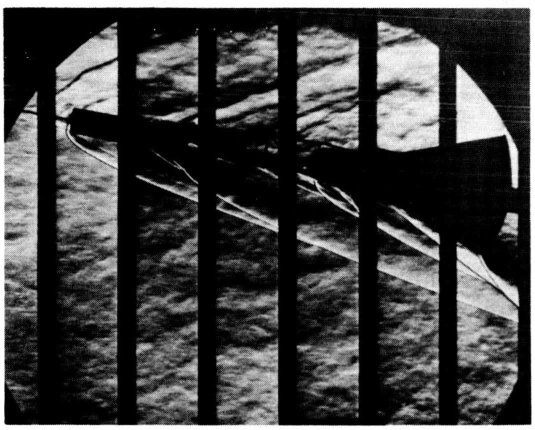
Figure 6.- Continued.

[redacted]

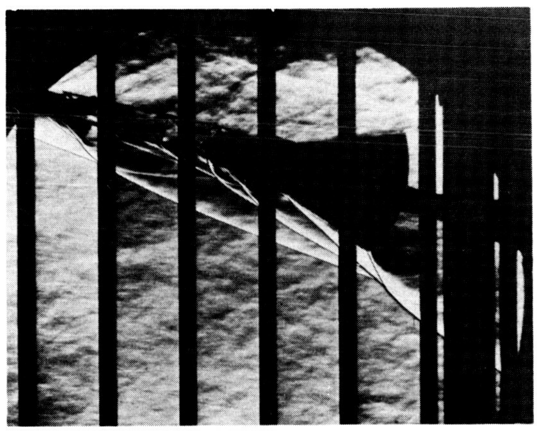
[redacted]

α = 0°

α = 5°



α = 10°

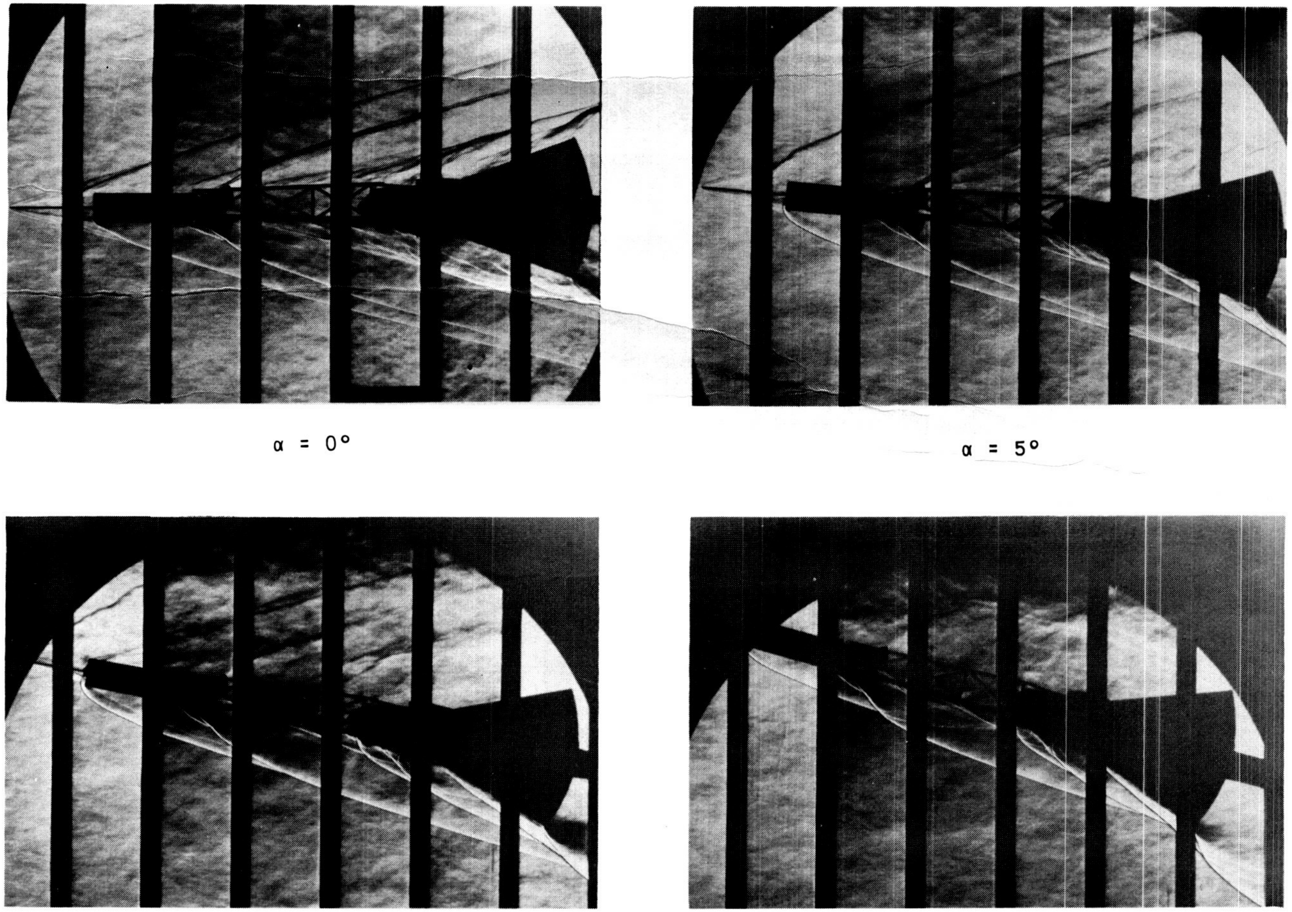


α = 15°

(e) Escape configuration; M = 3.50. L-61-77

Figure 6.- Continued.

[redacted]



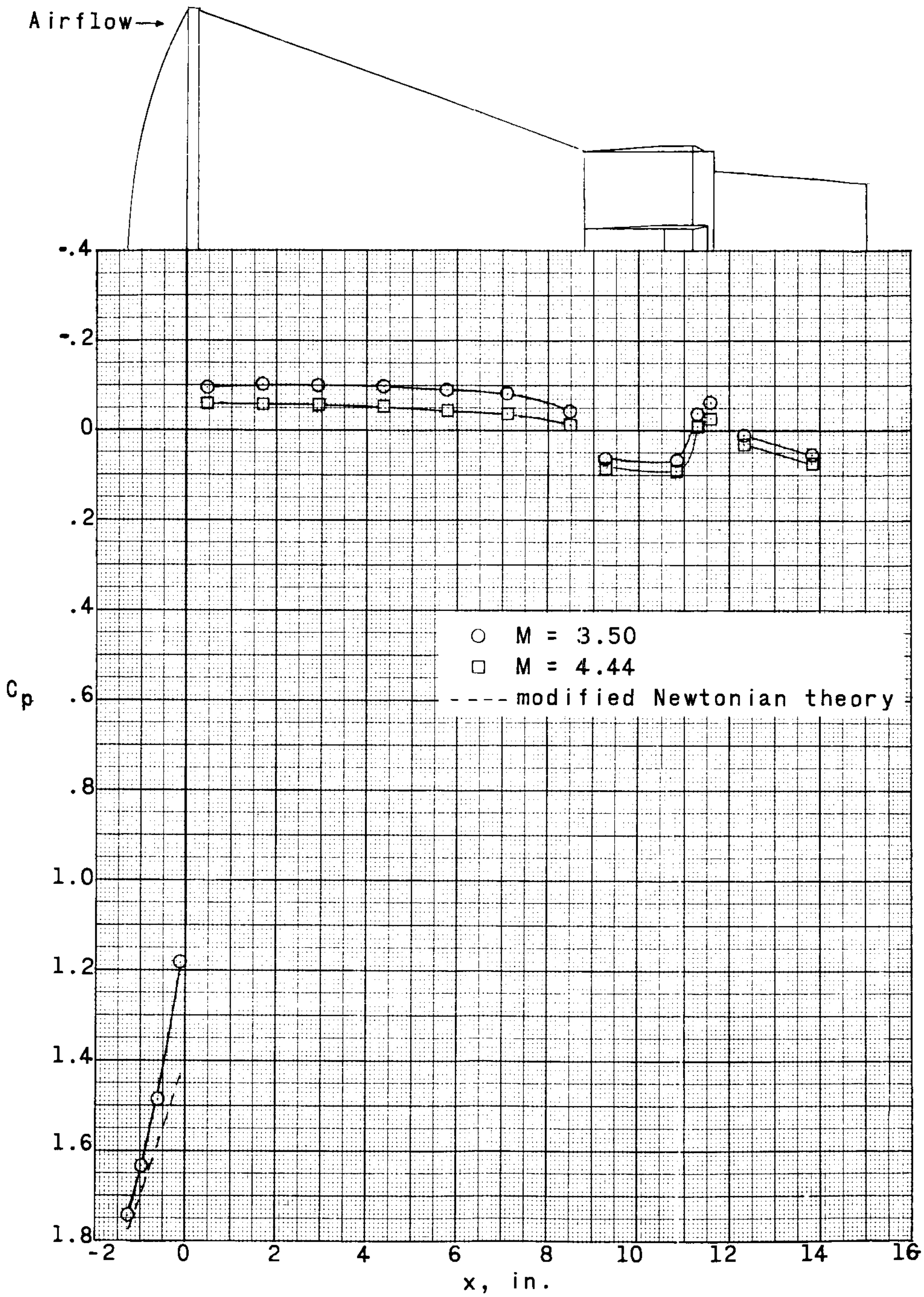
α = 0° α = 5°

α = 10° α = 15°

(f) Escape configuration; $M = 4.44$. L-61-78

Figure 6.- Concluded.

[redacted]



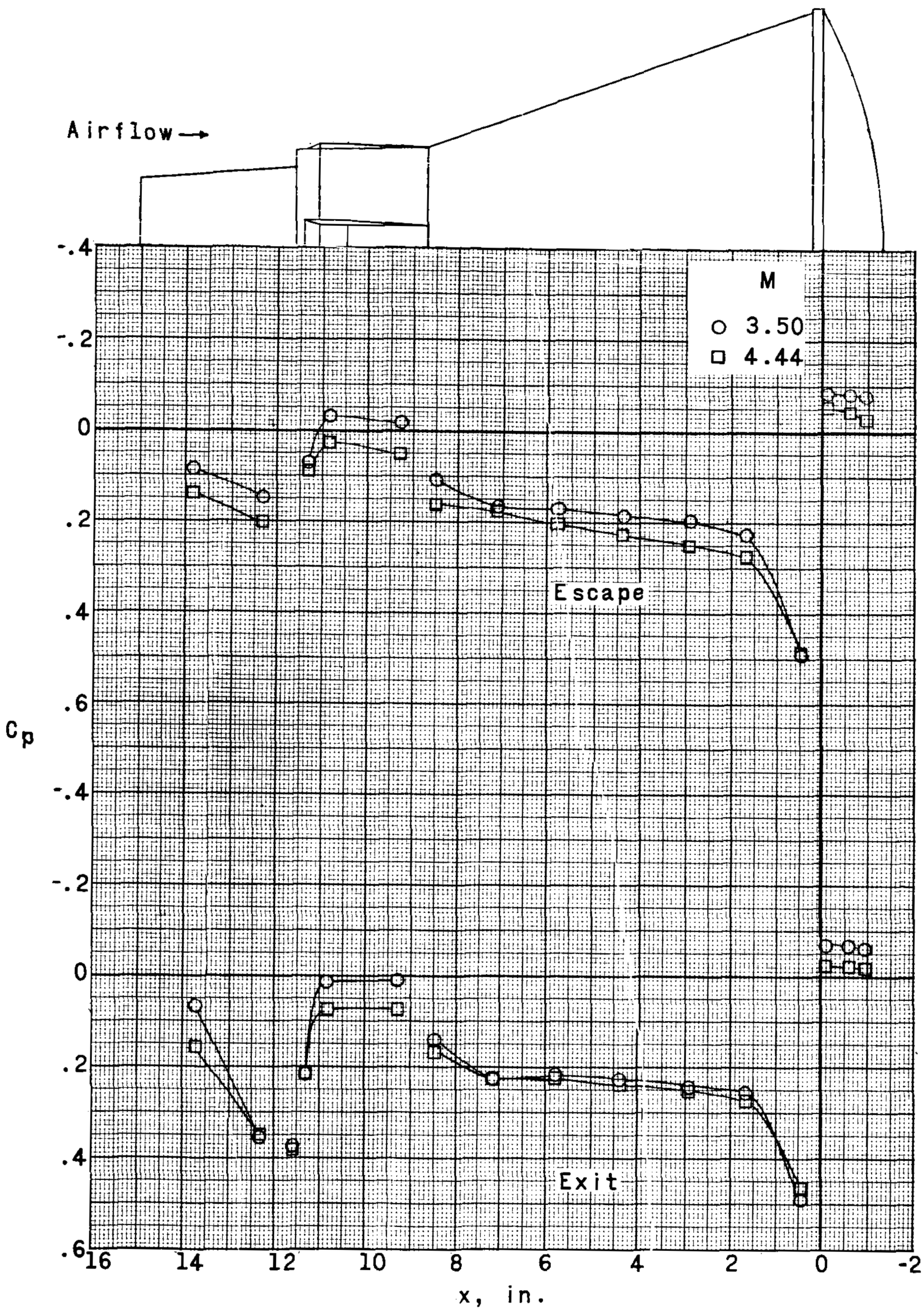
(a) Reentry configuration.

Figure 7.- Effect of Mach number on pressure distribution. $\phi = 180^{\circ}$; $\alpha = 0^{\circ}$.

[redacted]

L-1022

[redacted]



(b) Escape and exit configurations.

Figure 7.- Concluded.

[redacted]

[redacted]

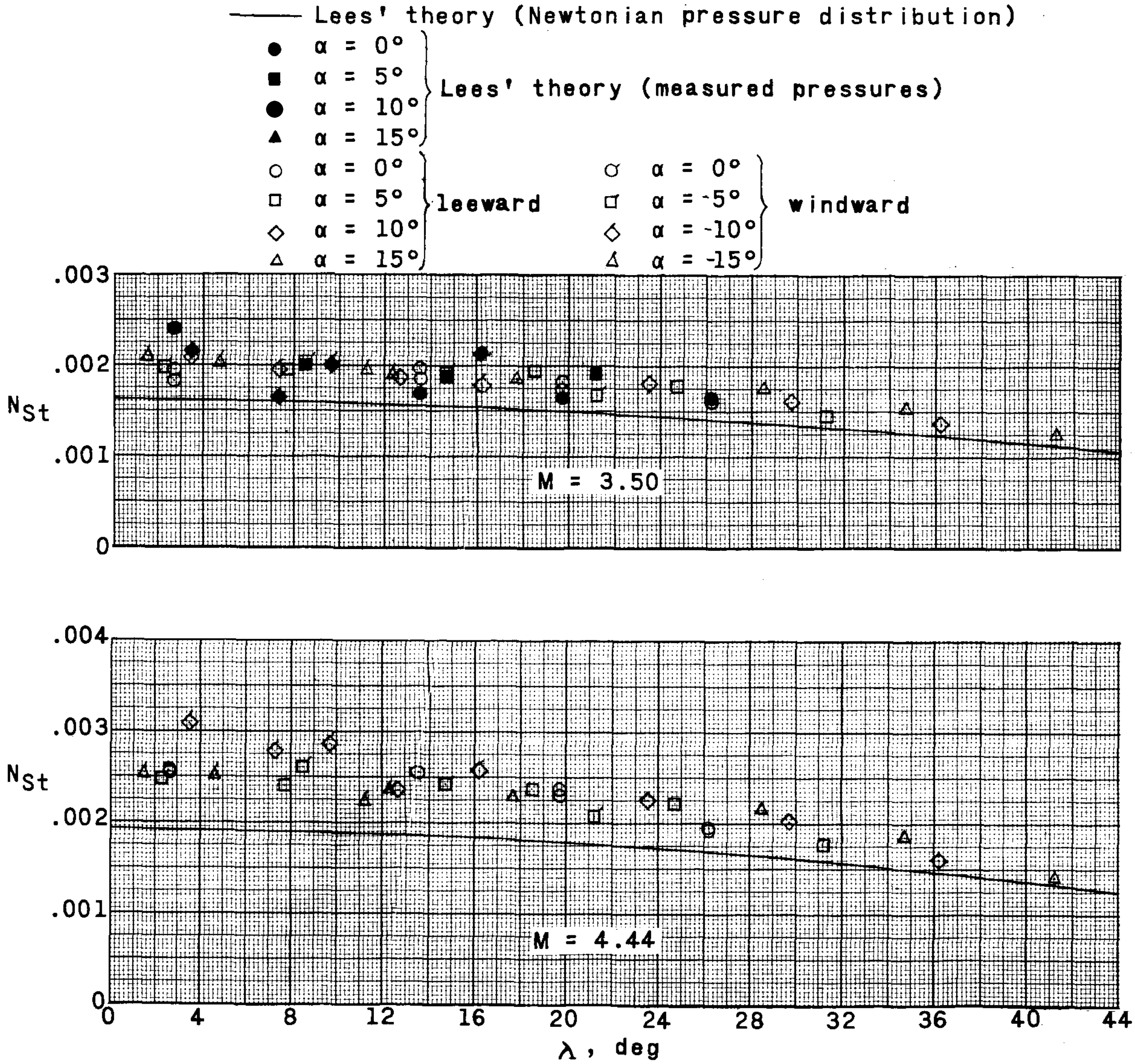
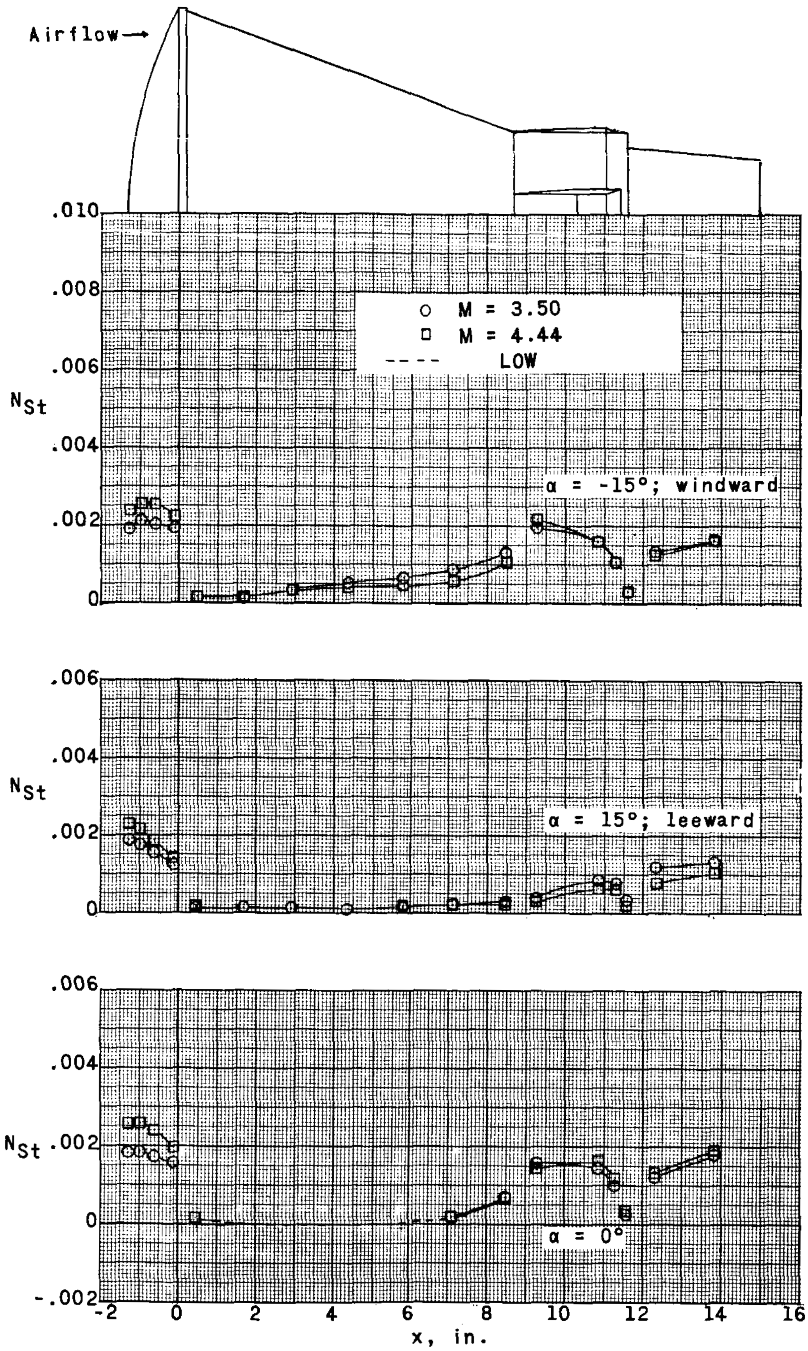


Figure 8.- Variation of Stanton number on the hemispherical heat shield of the reentry configuration for Newtonian flow angle.

L-1022

[redacted]

L-1022

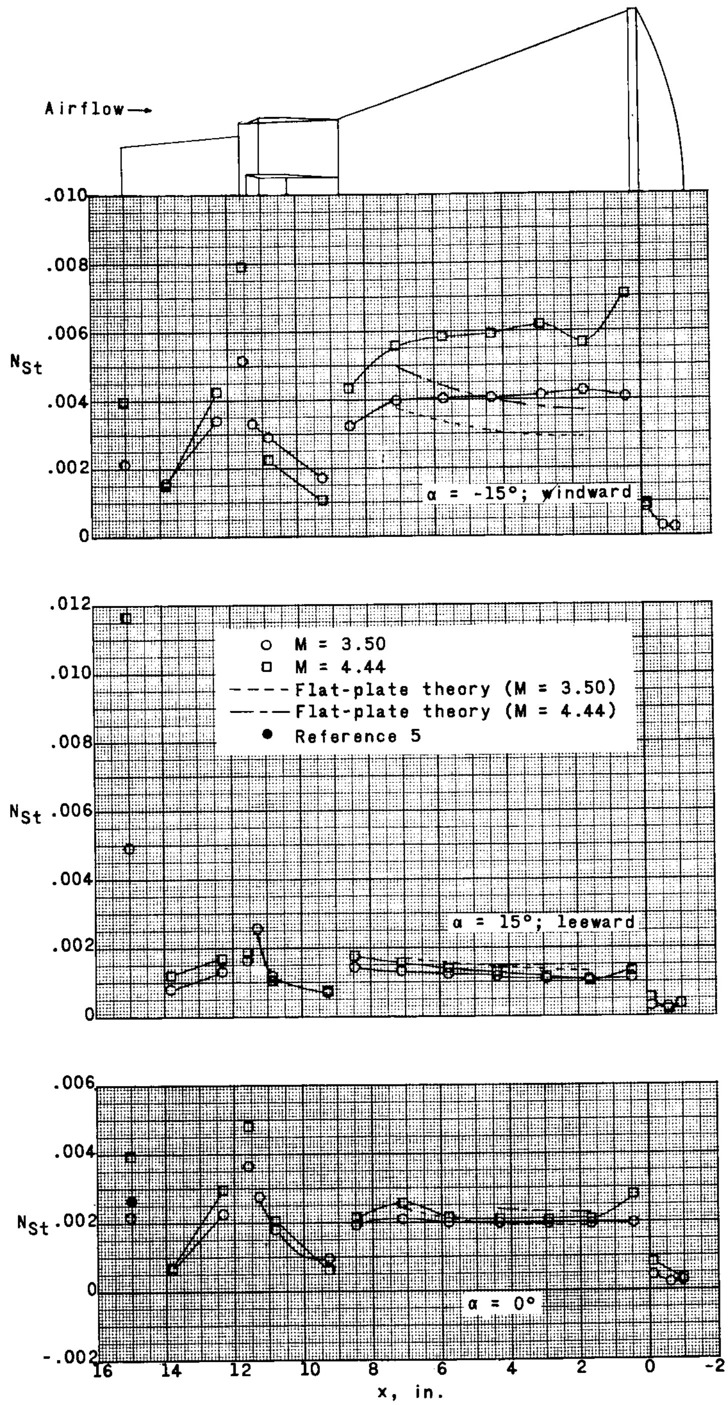


(a) Reentry configuration.

Figure 9.- Effect of Mach number on Stanton number distribution at $\phi = 0^{\circ}$ and angles of attack of 0° and $\pm 15^{\circ}$.

[redacted]

L-1022

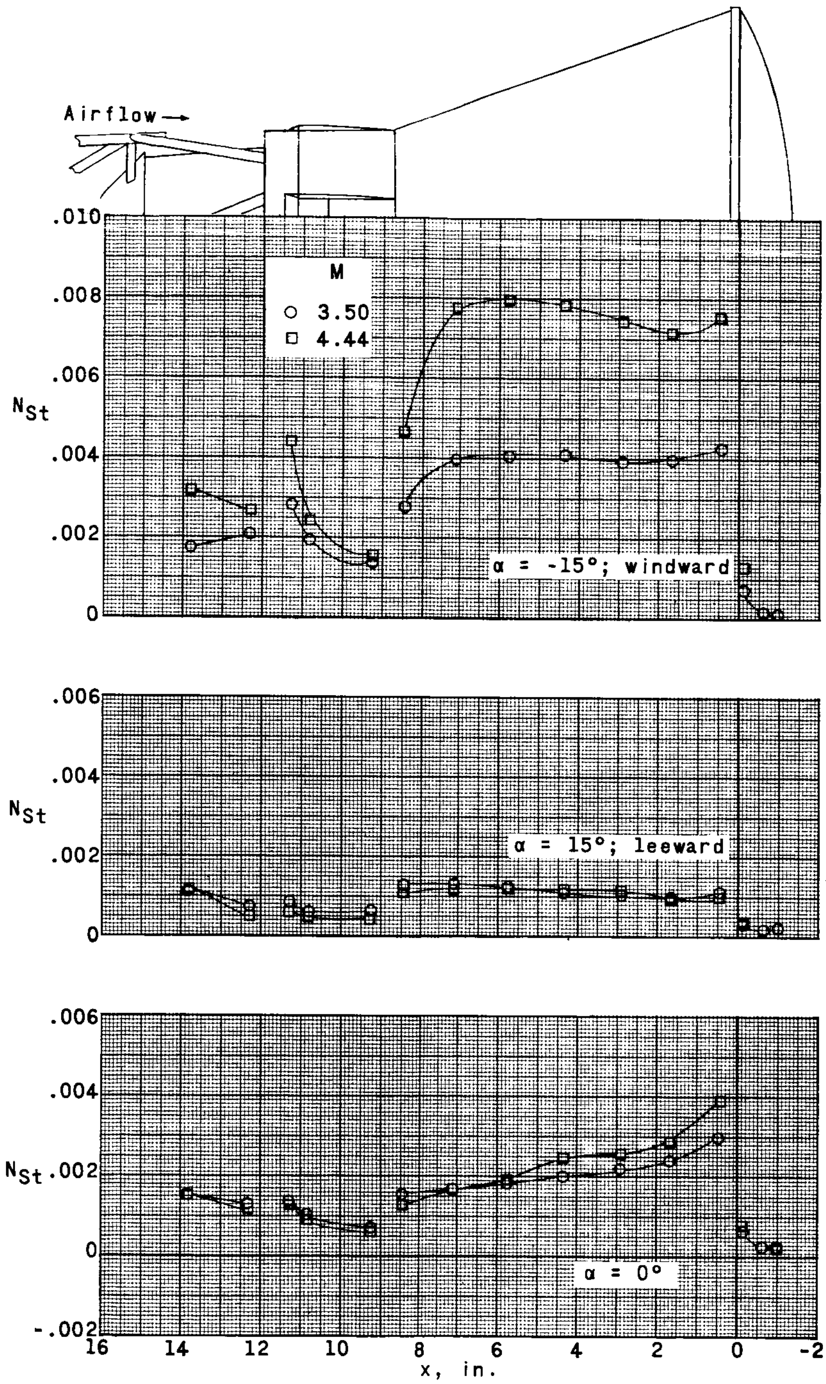


(b) Exit configuration.

Figure 9.- Continued.

[redacted]

[redacted]



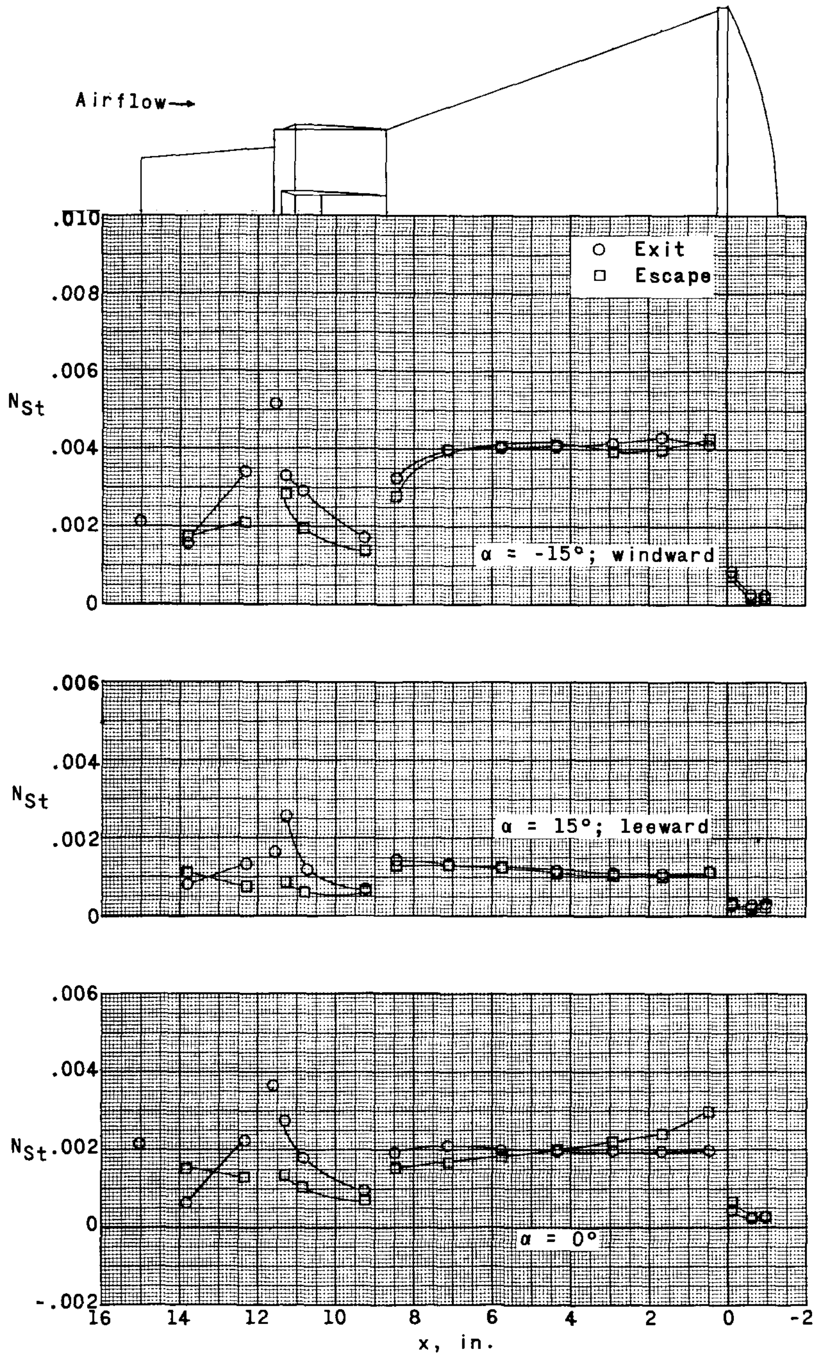
(c) Escape configuration.

Figure 9.- Concluded.

[redacted]

[redacted]

L-1022

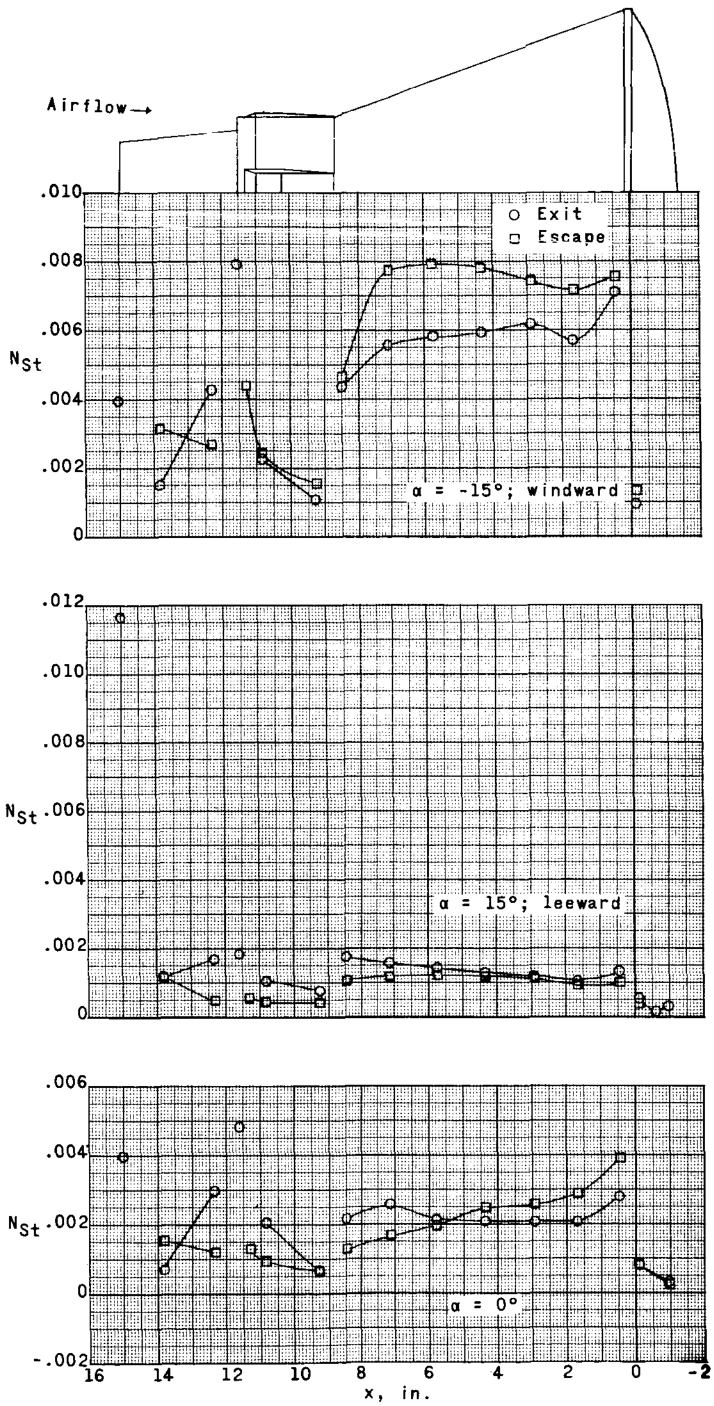


(a) M = 3.50.

Figure 10.- Effect of tower on Stanton number distribution at $\phi = 0^\circ$ and angles of attack of 0° and $\pm 15^\circ$.

[redacted]

[redacted]



(b) M = 4.44.

Figure 10.- Concluded.

[redacted]